AMERICAN BEE JOURNAL

MARCH, 1920



MOVING BEES IN MOUNTAINS OF FORECAUCASUS. NOTE TWO-WHEELED CARTS AND OXEN.

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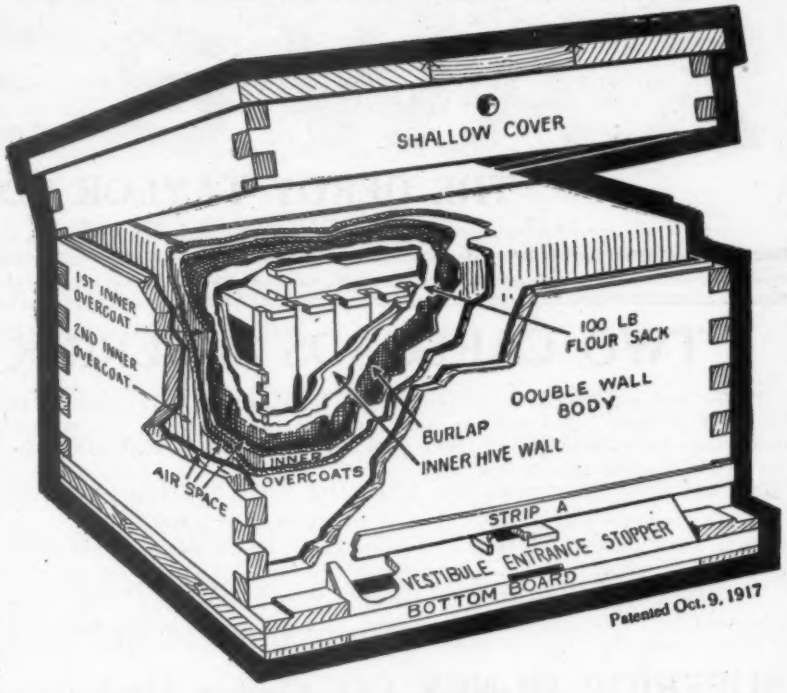
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All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

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SUPERIOR HONEY CO., Ogden, Utah (Manufacturers of Weed Process Foundation)

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Booking orders now with one-fourth down, balance just before shipping. Two per cent discount on January orders with full remittance. We have for several seasons shipped thousands of pounds of bees all over the United States and Canada. From Wisconsin last year, when my old-time beekeeping friends heard that I had bought bees from a man in Texas, they called me a fool; but now I have more bees and more honey than any man in Green County; it is the talk in this part of the woods. (Same party has in his order again for over a thousand dollars worth for spring shipping.) From West Virginia the State Apiarist pronounced my **queen** one of the finest **queens** he ever saw. "To say that I am well pleased would put it mildly; will want more bees and queens in the spring." **Guarantee** shipment to be made on time. **Free** circular explains, also gives prices on bees by parcel post, nuclei, etc.

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1-lb. pkg. bees $2.40, 25 or more $2.16	Untested $1.50 each, 25 or more $1.35
2-lb. pkg. bees $4.25, 25 or more $3.83	Tested $2.50 each, 25 or more $2.25
3-lb. pkg. bees $6.25, 25 or more $5.62	Select tested $3.00 each

Add price of queen when ordering bees.

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Price, postpaid, $1 per year
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Send for a free sample copy

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I will have 200 two and three frame nuclei for shipment in March and April and desire to ship to parties wanting 25 or more nuclei. Two frame nuclei, $4.00 each, three frame nuclei, $5.00 each without queens. When queens are wanted, add $1.50 for untested and $2.50 for tested queens. Orders must be booked early and a deposit made of 25 per cent of each order. No personal checks accepted.

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We are therefore situated so that we can pay highest prices, both in cash and in exchange for bee supplies. Write us stating quantity and quality of beeswax you have and we will give you our very best prices either f. o. b. Hamilton or your shipping station, together with shipping tags and instructions.

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Every inch, every pound, every ton equal to any sample we have ever sent out

YOU CANNOT AFFORD NOT TO USE DADANT'S FOUNDATION

We render combs into beeswax.
We work beeswax into Dadant's Foundation.
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DADANT & SONS, Hamilton, Illinois

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Early orders are likely to get through promptly.
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Don't lose a honey crop because of freight delays.

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"Beeware" users will have assurance of all the honey in their locality this year. The "Beeware" sign stands for quality, workmanship and Lewis service.

The "Beeware" distributor whose name is on the front page of your catalog can give you all that "Beeware" stands for. Write him.

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BRANCHES AND DISTRIBUTORS EVERYWHERE

G. B. LEWIS COMPANY, WATERTOWN, WISCONSIN
MAKERS OF BEEWARE

AMERICAN BEE JOURNAL

VOL. LX—NO. 3 HAMILTON, ILL., MARCH, 1920 MONTHLY, $1.00 A YEAR

BEES BY PARCEL POST

Description of a New Cage for Sending Bees by Mail

By Allen Latham

IN the number of American Bee Journal for May, 1919, was published an article under this title, and in that I promised to describe my device for shiping bees by parcel post. Since the first article was written I have had much more experience with the shipping case which I have invented and used, and shall tell frankly of its deficiencies as well as it excellences.

In the May article I mentioned the splendid success I had had with this case. This success continued during the season of 1919 in every case where the trip did not consume over four or five days. But this past summer I essayed to send bees to England, also to a distant point in California. Whatever the cause, I have to admit failure in all of these long distant shipments. Short disance shipments are one thing, while those that consume ten days or two weeks are another. A trip across this continent, thru the desert west with its arid atmosphere, and a trip across the Atlantic with its humid atmosphere, are again very different.

The editors of this magazine have prepared cuts of my shipping case. These with my description should make very clear the principles of this case and method of carrying out these principles.

As said before, every effort has been made to devise a container in which the bees would normally keep quiet and thus not use up their energy in wasteful excitement. As will be seen, this is accomplished by making the case dark and furnishing the confined bees with air thru indirect passages.

This case is a six-walled box, made either of thin board or some strong material like the various wall-boards now sold very commonly. The bottom is double. The two bottoms are spaced apart about three-fourths of an inch. The inner bottom has a round hole some three inches in diameter. This hole is surmounted by either a cone or a cylinder of wire cloth. In the illustration the case has a cone or thimble of wire cloth rising some three inches, but sometimes I substitute a cylinder of cloth rising five inches. The side walls vary in depth. Two of them, not adjacent ones, extend to cover both bottoms, while the other two cover only the inner bottom. Thus a space is left on two sides at the bottom for ventilation. These open spaces are shielded from rays of light by strips or blinds fastened on raised blocks. These blinds and the bottoms are painted a dull black on the inside surfaces so that any rays of light getting past the blinds are largely absorbed and thus very little light indeed gets into the interior of the case.



Package of Bees as it reached Hamilton

The cover or top of the case is removable and to this is fastened nearly a pound of soft candy. No arrangement is made for water on the theory that the bees keep the air within so humid that they feel no need of water. In fact, experience with the case lends credence to the idea that often the bees suffer thru an excess of moisture rather than from a lack. This was unquestionably the case with the shipments that went to England. The surviving bees in those shipments were daubed and the food dribbling. On the other hand, the last shipment to California arrived in a condition suggesting that the bees starved from lack of moisture, which they needed to liquefy their candy.

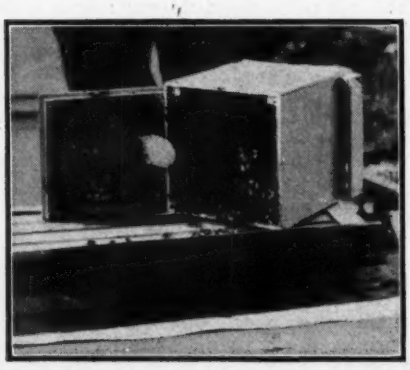
Right at this point I would suggest that experiments should be carried out to determine the moisture content of food given bees in transit. This content should vary with the conditions of the journey they are to traverse. We ought to have available some data that will inform us as to the needs of the different routes over which bees may be sent. Some routes need very dry feed, while others need very moist feed.

I am well aware that most persons upon first seeing this case will not be disposed in its favor. It is so contrary to their accepted ideas of the needs of bees that they will naturally condemn it. Few there are but will say at once that there is insufficient ventilation, but a second look will convince any keen observer that this case, though it may not force air upon the bees, does, nevertheless, furnish them an opportunity for getting air.

After bees have been imprisoned in one of these cases an hour or more, one can, by placing an ear next to the case, hear a few bees lazily humming. These bees are keeping a slow current of air going into and out of the box. Some 99 plus per cent of the bees are clustered in absolute quiet. This condition prevails for many hours, even for a day or two. After a confinement of two days or so, once in a while the bees will set up an uproar. They have been shut in as long as their patience permits. They wish to get out and fly. During the third, fourth and fifth days of confinement these periods of uproar will occasionally take place, the interval of time between the uproars varying with outside conditions. If the air is cool the uproar will almost cease, but if it be a hot and muggy day the interval will be small. The bees are now reaching a danger point. Unless the journey soon ends and the bees set free they will waste their vitality just as they do in ordinary shipping cases.

It is still a question in the writer's mind whether any case can be devised that will admit of the safe transportation of bees in hot weather if the trip is to consume over four or five days. The instinct of the bee is against long-continued confinement in hot weather. The bees chafe to be liberated ,and though darkness will keep them quiet for a long time, it will not fool them beyond a certain limit.

The writer is not a large shipper of bees by the pound. His total shipments in the last three years are probably under two hundred. Setting the number at 200, allow me to state the percentage of failure. The first loss was a 2-pound package sent only 100 miles. The express company let this package be held up enroute until the bees starved. The next loss was a shipment into Canada. This shipment was delayed in the customs house and the bees reached and passed the danger point. They got into a frenzy and ran amuck. They arrived a sticky dead mass of bees in the bottom of the case. The next loss was a shipment to a point not very distant. These bees were put up at the close of a day of heavy honey flow. The bees were bursting with new nectar. Evidently after they were confined they raised the temperature of the box through their conversion of the nectar and brought on a speedy death. Two have been made to England and two to California. All four of these have been either total failures or practically so. So far as I know, every other shipment has gone through in excellent shape, and in most cases the recipients have written me expressing their pleasure over the fine condition of the bees upon arrival.



Few bees had died after three weeks confinement.

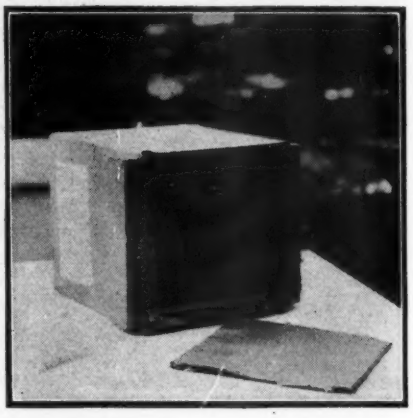
My experience tells me that this case can be relied upon to produce uniformly excellent results just so long as no effort is made to get it to do the impossible and so long as one uses care to see that the case is properly prepared. The things to avoid are shipments that will consume over five days, food that is very moist or very dry, and bees that are overloaded with thin nectar.

My method of stocking these cases is as follows: The cover is removed and the case inverted. Blocks are inserted between the blinds and the case to prevent bees from getting in between the two bottoms, from which they might issue on the trip and thus queer the business of shipping bees by post. The case is now weighed and its weight marked on the bottom. Next the case is set on a wide, thin board or even on the ground. The bees are next shaken down beside the case, care being used to see that the queen is started into the case, which is raised at one side on a small block of wood or a small stone. After a little experience one knows how many frames to shake. While the bees are going in, another case is started, and then the first case is again weighed and a few more bees allowed to enter, a few brushed out. I generally allow 18 ounces weight, for the package will shrink about two ounces within twenty-four hours. This method is much better than dumping bees into the case through a tunnel, for most of the old bees fly back to the hive and only young bees, for the most part, remain to crawl into the case.

An even better way to stock these cases is to use temporary boxes into which bees are driven and confined over night. The next morning these bees are dumped on the ground next to the cases and after they have quieted and all taken a flight which desire it, the cases are closed and the bees started on their journey. It is hardly necessary to state that if this last method is used the bees must not be taken and released in the same apiary.

The failure of my case to carry bees successfully to England and also across this continent from Connecticut to California was a great disappointment. But it has not shaken my belief in the case for domestic use. It will carry bees successfully from the South to the North, and will carry them half way the length of the United States. As the pound package industry rarely demands a journey exceeding three days, this case will meet the needs admirably.

If we are to ship bees to England or other distant points we must, I feel sure, seek the solution of the problem not in the case in which the bees are shipped, but in the atmosphere in which the case is kept during the journey. If we could persuade the postal authorities to provide special cars, or if shipments could be made on a sufficient scale to pay for a refrigerator car we could solve the problem. I feel fairly certain that if the atmosphere of the car could be kept at about 70 per cent humidity and about 45 degrees for temperature, bees would be quiet for a long period, possibly even a month or more.



Bottom of cage with cover board removed.

I wish to reiterate that which I have stated with emphasis before. If we are to make the shipment of bees in pound packages successful we must conserve the vitality of the bees. A customer who receives a lot of bees for which he has paid good money, which peter out before they can rear brood to take their places will be a dissatisfied customer. We must see to it that there is no cause for such dissatisfaction.

Connecticut.

(Mr. Latham's package of bees sent to us was received in the fall and was kept in the office as long as the food lasted, which was in the neighborhood of two weeks. We then united the bees with a weak colony. Hardly a dozen bees were dead, and all appeared in fine shape, which speaks well for the cage. Of course, it being fall, the bees were not subjected to excessive heat, but the fact that they came out after nearly three weeks from the time of shipment in such excellent shape goes to show that Mr. Latham's cage has merit.—Editor.)

Package Bees

By Jay Smith

IT is now generally agreed that the combless method of shipping package bees is no longer an experiment, but an established, successful industry. Nevertheless there are two features of this method of shipping bees that for a long time threatened to make this method a failure,namely, loss of bees during transportation and loss of queens in those packages.

When one reviews the past successes, or rather failures, in this line he is sometimes led to wonder how the industry survived at all. I do not

mean to cast reflections on the other fellow, for we have had our troubles along with the rest. Bees would die enroute, sometimes when on the road but 24 hours. The reason for this was because the bees had worried themselves to death trying to get out through the wire screen. The remedy for this I shall explain later. Many queens were killed or balled and injured, and the customer would write that the packages were queenless.

The opinion has become prevalent that queens do not stand shipment well in combless packages. Statements of this kind have been made in this Journal. In the March number, 1917, in an excellent article, Mr. A. G. Woodman gives his experience in buying bees from the South. He writes: "One of the greatest troubles was poor queens. The packages, after being in the hive a week or two, would be found queenless, or the queen would not be laying as she should." In the Michigan State Convention held December 8 and 9, it was the opinion of all who had bought package bees that the greatest obstacle in these purchases was the fact that packages arrived with dead queens or that queens were injured and soon superseded. It is my belief that there is no better or safer way to ship queens than in combless packages. The trouble is not in the **shipping** of the queen, but in the **introduction of the queen to the package.** Many do not stop to consider that the queens are mated in nuclei and must be introduced to the package. It has been my experience that it is fully as difficult to introduce a queen to a package of bees as it is to a regular colony in a hive. One practice is to send the queen in a mailing cage fastened to the outside of the cage containing the bees, on the theory that they will become acquainted during the shipment. In this way the burden of introduction is thrown on the purchaser and the loss borne by him. We have found that where bees do not have their own queen loose with them in the shipping cage, they fret and do not stand shipment as well.

One party in Michigan reported having purchased 100 packages from the South and, out of the 100, 60 were queenless and at once developed laying workers, which rendered them almost worthless.

What it may be of some service to beekeepers in remedying these defects, is the purpose of this article. The question has frequently arisen in my mind that as we can send queens and a few bees all over the world with success, why can we not do the same with a larger number of bees if the conditions are right? In the ordinary mailing cage the bees are kept mostly in the dark, while in the common wire cloth pound package cage the bees see light, but do not seem to see the wires, and they try to get out, and thus worry themselves to death. Some time ago Gleanings showed a wooden cage with saw kerfs in the sides, which they report as giving perfect satisfaction.

Last season we used the cage as shown in the cut, and it gave perfect results either by parcels post or express. This cage is not difficult to make and is not expensive. The ventilation, being in the bottom and top, cannot be shut off if the cages are placed close together in shipping. Two short wire-cloth cylinders, one in the top and one in the bottom, prevent the bees from crowding toward the openings and shutting off ventilation. The cylinders are not difficult to make. Wire screen is wrapped around a cylindrical piece of wood and forced through the meshes of a square piece of wire screen and the ends bent over. This makes a solid cylinder that will stand shipment well. Short legs on the bottom insure ventilation there and the wooden handle prevents stoppage of ventilation there should the cage be covered up. A thin piece of wood supported by cleats on top of the cage keeps out the light and little light can enter from the bottom. Another feature of this cage is the removable bottom. To get the bees out it is only necessary to remove the screws that hold on the bottom and shake the bees in front of the hive, or they may be shaken into the top of the hive and the cover put on.

The question of water or no water has been discussed at length, but our decision, after trying both side by side, is that the bees without water go as well, if not better, than those supplied with water.

The bees in this light-proof cage hang in a cluster and seem to be as contented as bees in the regular mailing cage. Upon one occasion, while experimenting, I took several packages in the wooden cage and several in the wire cage to the postoffice for shipment. While waiting there, men came at different intervals smoking cigars. The bees in the wire cages would at once begin to roar and would continue to roar and fret for some time after the smoke had cleared away. The bees in the wooden cages never seemed to be disturbed by the slight odor of smoke and remained quietly hanging in a cluster.

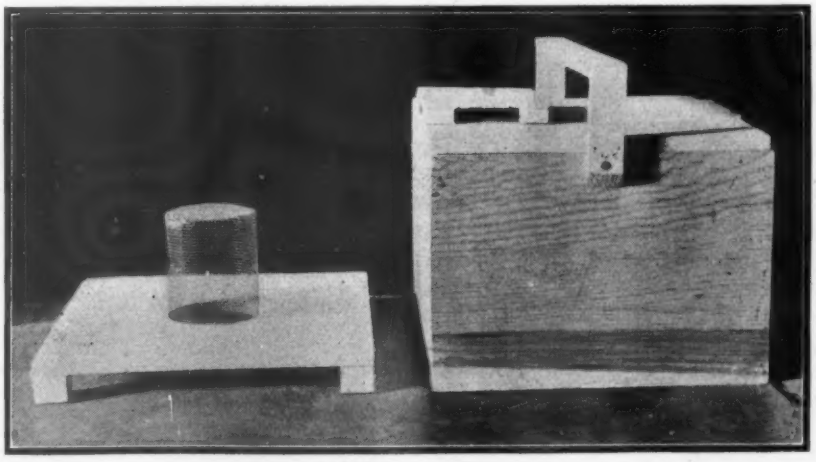
Now let us go back to the subject of introducing the queen to the package. As above stated, for best results, the queen should be at liberty in the package with the bees. By any known method of introducing the queen to the package, there will be a percentage, and usually a large percentage, of loss. Many queens are killed outright. Some are crippled and prove inferior and are soon superseded or may remain at the head of a colony and lose for the beekeeper a crop of honey. Sometimes the bees apparently accept a queen, but as soon as they are placed in a hive and given a frame of brood, they will pounce upon the queen and kill her. In shipping package bees with queen, it is my opinion there is only one safe and fair course to pursue, and that is to introduce the queen to the colony **from which the bees are to be taken** and then, after the queen is laying and safely accepted, she is shaken into the package with the bees she has come to recognize as her own. In such cases the queen is **never** killed or injured and the risk of introduction is borne by the one who sells the package, as it should be.

It seems to me, in all fairness to the one who buys package bees, that the queen should be safely introduced before being shipped and the shipper should not only make good all losses of queens but should also make good any loss to the package which resulted from the loss of the queen. If, for instance, the package arrived queenless and developed laying workers, so as to be worthless, the one who sold the bees should furnish both package of bees and queen. If required to do this, it would insure more careful introduction by those doing pound package business.

Indiana.

Montana Beekeepers Meet

The beekeepers of Montana held a lively convention at Billings on February 2 and 3. Nearly all present were engaged in honey production on a commercial scale. Montana is one of the best States for honey production. Much of the time was given up to the discussion of the control of foulbrood and the necessity of securing legislation for the protection of the bees.



Smith's wood cage.

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

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Published monthly at Hamilton, Illinois.

Entered as second-class matter at the postoffice at Hamilton, Illinois.

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THE EDITOR'S VIEWPOINT

The Bee World

The October number of the Bee World, published at Benson, Oxon, England reached us in December. Its publishers complain of want of support. This should not be. The Bee World is trying to become an international magazine on bees, and we need such a magazine. It is an excellent publication and should not go a-begging. The fault with it, as with many other European periodicals, is the lack of advertising pages. No magazine can live and thrive if it is not supported by advertisers. That is probably why our American magazines succeed. Our cousins in Europe are short on this point.

Good Samaritan

Franco-Belgian Fund

Fifth List.

Total of four former lists	$554.35
Harry Lathrop, Bridgeport, Wis.	1.00
S. D. McAuley, Waterloo, Ia.	.25
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L. P. Zimmerman, Louisville, Ky.	2.00
New Jersey Beekeepers' Ass'n, by E. G. Carr	25.00
E. G. Brown, Sergeant Bluff, Ia.	5.00
A. M. Nelson, Inwood, Ia.	10.00
Total to Feb. 8, 1920	$618.60

Other subscriptions are:

The A. I. Root Co., $300 of supplies at wholesale.

B. J. Cole, Santa Monica, Calif., 12 to 20 queens.

The Apis Club, Benson, Oxon, England, 5 guineas.

The last named subscription was accompanied with a very kind and complimentary letter from our English beekeeping brothers.

The perplexing question is whether to exchange the cash **now** for European exchange, or hold it till it is needed for use. We thought we were doing a wise thing by placing our first subscription of 500 francs in French funds at once. This was worth at the time $55.85. At present the same sum in francs could be purpurchased for $35. The total cash subscription would now bring 8,539 francs. As francs are depreciating, it may be best to hold the funds in American dollars till the purchase of bees is made.

Our subscribers to this fund must bear in mind that their money is more and more welcome to the French and Belgians, since their funds are depreciating. A one dollar subscription now represents between 14 and 15 francs.

We are in receipt of a letter from the beekeeper who was in charge of the rehabilitation of apiaries in the devastated countries and we give a quotation from it. Mr. Graham-Burtt's work has been highly praised by a number of French beekeepers:



Apiary from which colonies were produced for the work of the Mission des Ames in 1919. The wind screen is made of camouflage netting.

"I am very glad to hear of the subscription you are getting up and wish it every success. The need is so great that any amount of money and supplies could be sent; however, you are fully as well informed as myself.

"As regards the work which has been done by the 'Mission des Amis' in this matter; I am at present preparing a report, of which I will send you a copy. The area covered has been, roughly, the northwest part of the Meuse, and the southeast part of Ardennes, and for this area I I have produced and distributed about 170 colonies in frame hives, mostly Dadant-Blatt, and have purchased and distributed about 600 colonies in straw skeps, so that all the beekeepers who have returned have been able to purchase bees to restart their apiaries at from one-third to one-half of their current market value. I have also established a 'Rucher de Reserve,' which I have left in the hands of the 'Societe d'Apiculture,' to enable them to carry on the work of reconstruction; these matters, however, will be given more fully in my report."

GRAHAM-BURTT,
Stroud Road, Gloucester, England.

It will be seen by this letter that only a small area of the devastated regions has been restocked. The Society of Friends will have another man there. We have also secured the services of the noted beekeeper and writer, Mr. J. Crepieux-Jamin, of Rouen, as an additional member of the committee. He is near the western part of the devastated regions and his help will be valuable. Mr. Crepieux-Jamin is a very devoted man, who will give his time without stint to the cause.

We need more cash subscriptions, to buy swarms in the Netherlands and in Southern France. The need is very great.

Take note of the fact that the Society of Friends is not giving away the bees and supplies, but selling them at from one-third to one-half of their actual value. In this way they can help more people, since the funds reach a greater scope. Besides there is no fear of donating bees to people who would not care for them since a man who buys bees at half price must be a beekeeper. The thing is evidently well-managed and we are very proud of our people. Europe needs help still, and the best proof of it is in the depreciation of the currency. We cannot do too much. In fact, we will never be able to do enough to help make up for the fearful losses inflicted on those provinces.

Foulbrood Cure by Antiseptics

Since we gave place to a recommendation for antiseptics, in the cure of foulbrood, by a bacteriologist of Nice, on page 233 of our July number, it is but right that we should enter the complaint of two parties who found the cure unsafe, for it killed the bees as well as the disease. The great stumbling block in the way of antiseptics is to find something that will kill bacilli and spare the bees. We have much to learn.

A Letter From Mexico

Urnapan, December 19, 1919.

We wish you a happy new year. I sent you a nest of small wasps, but could not send the live wasps. I hope you received the nest in good shape. (Yes, it was very interesting.—Editor.)

You will be glad to hear that Mexico is slowly but steadily becoming pacified. Villa is on his last resources and many bandit chiefs have been killed or have surrendered. In this state—Michoacan—they have killed two bandits who were committing depredations in the "hot-lands." If things keep on improving you might be able to pay us a visit safely in a year or so.

While you are suffering under 18 inches of ice, the orange trees are beginning to bloom here and the bees work from daylight till dark. Their supers are beginning to fill. I send you a few violets picked in the courtyard of our factory.

The bee disease of which I have spoken in a previous letter to you is the "disappearing disease." The bees become shiny, beat their wings feebly and drop in the grass. Whenever they are able to discharge the fetid matter which is contained in their abdomens, they get well. The trouble lasts but a few days. I propose to study it next year if it comes again.

Our local factory of cotton tissues, in which I am bookkeeper and assistant manager, employs 200 hands. We manufacture goods only for local consumption.

Accept our best wishes.

P. PROVENSAL.

Spacing Wires

We call the attention of our readers again to the articles in the February number dealing with the subject of comb foundation and its wiring to secure perfect combs. These articles have called forth considerable criticism and we have had some inquiry as to how the new method of wiring succeeds. The placing of the first two wires very near the top-bar was first suggested by Mr. J. E. Crane, who is known by all as a large and thoroughly reliable beekeeper. Mr. Crane stated that he had had no trouble whatever with sagging since using this method. This method has also been tried in the Dadant apiaries, and with success. Through our suggestion, the Lewis Company, at considerable expense, have readjusted their machinery so that all of their frames will be sent out henceforth under this new plan. We have no doubt but that it will mean many perfect combs if the wires are put in carefully and cemented into the foundation by a good imbedder.

We believe that after sufficient trial by the beekeepers they will demand that their frames come wired in this manner and that within a short time all manufacturers will have changed their methods of wiring to conform to this.

Death of a Lady Beekeeper of International Fame

We are in receipt of a letter from our old friend, the well-known writer and editor, Thos. Wm. Cowan, of England, informing us of the death, on January 1, of Mrs. Therese Bertrand, widow of the once editor of the Revue Internationale d'Apiculture," of Geneva, Switzerland. Probably few of our readers know of this estimable and talented lady, who for years worked with her husband, both in keeping bees and in editing valuable works on bees.

The daughter of parents who were both famous in literary circles, Mrs. Bertrand labored with zeal for the promotion of progressive beekeeping on the Continent. She was a linguist and often translated articles for publication. The January number of the Bulletin de la Suisse Romande publishes the translation of an article from the American Bee Journal, upon which she must have worked only a few weeks before her death.



Mrs. E. Bertrand.

Mrs. Bertrand was also known for her great heart and her devotedness to the cause of humanity. In 1914, when 72 years old, she volunteered, with 1,200 other Swiss women, to organize the International Red Cross Prisoners' Agency, which located the fate of 83,000 men in the early part of the war, when other services were not yet fully organized.

Those who have the files of American Bee Journal since 1913 can find mention of the Bertrands in October, 1913; May and October, 1914; April, 1915 and March and June, 1917, when Mr. Bertrand died. The leading book of the Bertrands, "Conduite du Rucher" (Management of the Apiary), was translated into seven different languages. It expounds the American systems for European use.

Harmony

There was a time when bitter words passed between American writers on bees, because they could not agree. There has been a little of this in the British Bee Journal, and a writer in that magazine for January 8 writes:

"What is wrong with beekeeping, or rather with beekeepers? We have had teacup storms about rival antiseptics, skeps, the price of bees, the standard frame, and now legislation, the last of which can only be settled, if we are to take some writers seriously, by burning the editors on a pyre of the Journal.

"What is the matter? Has a long course of acid injections from our little six-legged friends worked in some of our bee masters a change for the worse? Or is it that they have forgotten that conditions vary in nearly every apiary, and that no two beekeepers' requirements can ever be exactly alike?"

These are wise words. Many times people disagree because their experiences are different and they cannot understand that the other fellow simply sees things from another angle. Let us be patient and cheerful with each other. We have seen enough of war. Life is too short to wrangle.

The Sladen Two-Queen System

By F. W. L. Sladen, Apiarist, Canadian Department of Agriculture

THIS system of management, which was planned to meet the conditions found in the vicinity of Ottawa, Canada, and other northern localities where the swarming season begins about four weeks before the principal honey flow and lasts with great intensity for about ten weeks, described in two of the bee journals last year (Canadian Horticulturist and Beekeeper, October, 1918; American Bee Journal, April, 1919), has been further tested and developed this year.

The principal objects of this system are to reduce the work of preventing swarming and to increase the number of bees raised for working on the clover.

The 1919 experiments show that both these objects have been attained, and that, although the season was less favorable for spring breeding in spring than usual, a somewhat larger crop of honey was secured by the regular colonies, the greatly increased populations having overbalanced a flagging in the work of the bees during the requeening period. Means for reducing this idleness are being studied.

This system is part of a scheme to render practicable and profitable the management of outapiaries, requiring only occasional visits in summer and none in winter, in certain parts of Canada where at present vast quantities of nectar are going to waste for want of bees to gather it.

The queen is caged or removed at the beginning of the honey flow from clover, and eight or nine days later all queen-cells are destroyed except two, one on each side of a division then inserted, or two ripe queen-cells are given. A special portico is fitted over the front of the hive to enable the two queens to mate without meeting. Bees meet in supers above the excluder. From the date the bees are taken from the cellar at Ottawa, about April 12, until the clover

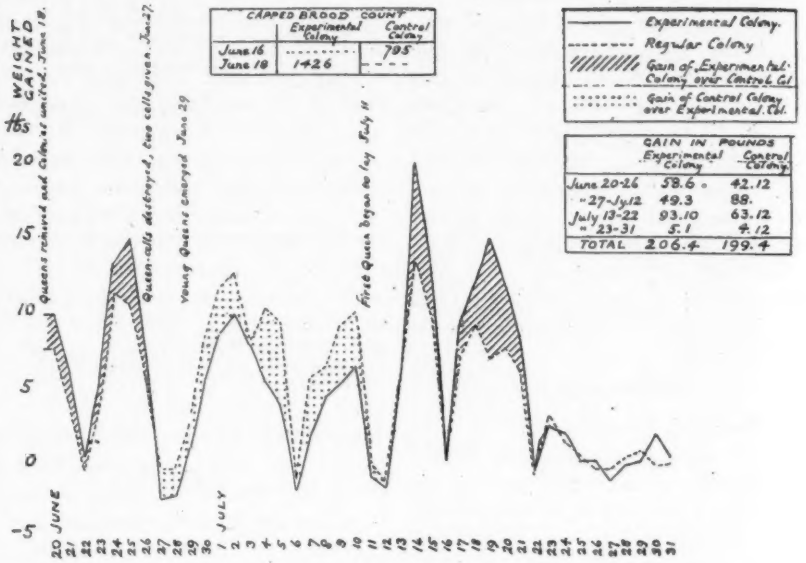


Chart 3. Comparison during clover honeyflow of two hives on scales, one of them (continuous line) containing two half colonies which were dequeened and united, raised two queens. The other (dotted line), an ordinary or control colony, contained fertile queen. The latter colony examined every week, had no active queen-cells after June 10.

flow, which does not begin until about June 22 (average of last five years), the days are comparatively warm and long,* so that two strong colonies are developed from each hive by the time the clover flow begins. Ordinary colonies that have wintered well begin to swarm during the dandelion flow about May 24, but colonies managed by this system are not strong enough to swarm during the dandelion flow. By this means and by the re-queening at the beginning of the clover flow there is avoided the great labor of lifting off every super, examining every comb containing brood and finding and destroying all the queen cells every week during the ten weeks the swarming season lasts, which so far has been found to be the only satisfactory way to prevent swarming at Ottawa.** The two queens raise a much larger force of bees for working on the clover than ordinary colonies containing only one queen. Moreover, without further manipulation, a moderate increase of colonies is obtained and young queens are raised for the next season's work.

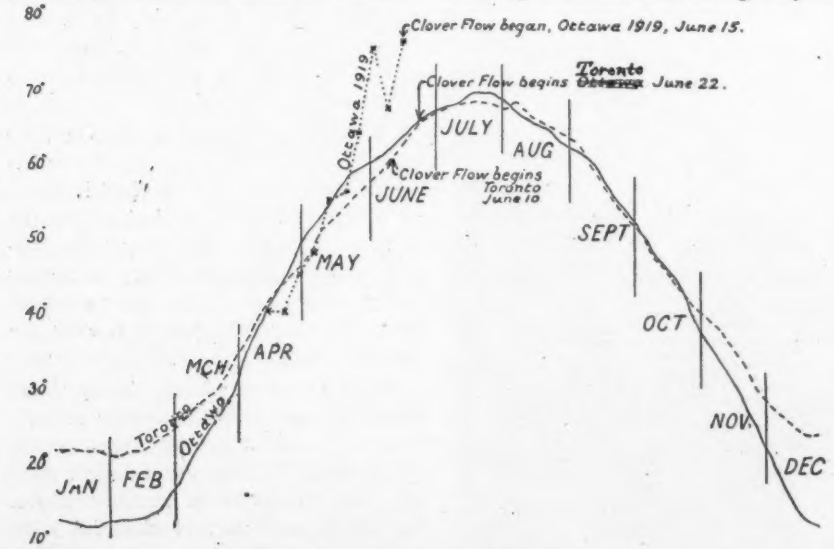


Chart 1. Average weekly values of normal daily temperature, Ottawa and Toronto, and dates clover flow begins.

* At Ottawa there is a rapid rise in normal daily temperature from 39 degrees on April 12 to 64 degrees on June 22, 25 degrees in 71 days, or about 2½ degrees a week. During the four weeks preceding June 22, the normal daily temperature is 61½ degrees, and the average length of day 926 minutes. At Toronto, during the four weeks preceding June 10, which a correspondent informs me is the date at which the clover usually begins to yield in that neighborhood, the normal daily temperature is only 56 degrees and the average daily length of day 901 minutes. At Ottawa the period of April 23 to June 22 is actually about 2½ degrees warmer than at Toronto (see chart 1), due to the proximity of Toronto to the Great Lakes. But, apart from this, in the north the breeding period preceding the clover flow may be as warm as or warmer than in the south, because it comes later, and the north warms up quickly. Also the further north one goes, the longer is the day during the breeding period, not only because the days are longer for the same date, but because this period is nearer the longest day. At Ottawa the spring warms up so quickly that the bees pass without any waste of energy from the winter's rest to the almost full activity of breeding. This, however, is a continental condition, and does not occur on the Pacific Coast. Owing to the greater difference between day and night temperatures than in the south and on the coasts, the days in spring at Ottawa are actually warmer than the normal temperature indicates. The day temperatures also vary more from day to day, so that there is much less dwindling weather. 45 to 55 degrees. Most of the days are either so warm that the bees fly freely under what would be called in England summer conditions, or they are so cold that they remain in the hives.

These conditions furnish reasons for the important fact that has come out very prominently in these studies that the conditions are more favorable for breeding up for the clover flow in the northern half of the clover belt than in the southern half.

** The great prosperity in the hive induced in the spring and summer by the favorable climatic conditions of the north combined with the intense and long-continued honey flows also helps to explain the intense and long-continued desire to swarm, which is unknown in the south. Giving plenty of ventilation and room in the brood chamber cannot be relied on to prevent swarming in the north, and our experiments with the plan of separating queen and brood have so far proved unsatisfactory.

Twelve hives of bees, each containing two queens, were wintered in the cellar in 1918. Eight of these were in 10-frame hives, and four in 12-frame hives. All wintered well.

Two of the 10-frame hives were taken to a farmer's garden three miles south of the city on May 8, 1919. The bees and queen on the right side of the hive were transferred to separate hives on May 27. (This transference would have been better done ten or fifteen days earlier). The four colonies built up rapidly. On June 24, when all the colonies had eggs or larvæ in queen-cells, showing that they were preparing to swarm, all the queens were removed. On July 3, the queen-cells were destroyed, two being left or given, one on either side of a double wire-cloth division then inserted. No swarming took place and on July 29, when the white honey crop was removed, the brood chambers were examined. One had brood in all stages on both sides of the division; the other three had brood on one side only. The loss of one or two of these queens was probably due to the hives being less than a foot apart. One super was put on each hive for the dark honey crop, which, owing to drought, proved a partial failure, and all the supers were removed, partly filled, on September 23. The yield of one of the original hives was 230 pounds of white honey and 30 pounds of dark honey, total 260 pounds, which was sold at 27 cents for $70.27. The other hive gave 351 pounds of white honey and 52 pounds of dark, total 403 pounds, which was sold for $108.81. In addition to the honey produced, there was an increase of three hives of bees, or 150 per cent. One of these had been built up from nuclei with two of the old queens. Allowing $7 each for the value of the three new hives, and deducting $12.46 for 111 pounds of sugar fed for winter, and $6 for three combs of honey that were given to the nuclei, the average return per hive, spring count, was $90.81. This figure takes no account of the fact that the bees built the combs to hold one-third of the honey produced.

The season for breeding up before the honey flow was not as favorable as usual, being three degrees colder than the average up till May 11, and nine degrees warmer than the average after May 25 (see Chart 1), so that the clover flow started on June 15, a week earlier than usual. At this date, at the home apiary, the half colonies, which had been placed in separate hives on May 22, were beginning to work in the supers.

On June 23 the capped brood count of the two colonies which had developed from a 10-frame hive that had been successfully requeened in July by the system method showed 1544 square inches, against an average of 845 square inches each in the one-queen hives that had wintered with it in the cellar, and 955 in the one-queen hives wintered outside.

On June 18 the queen with a frame of brood and adhering bees was removed from two half colonies that had wintered together in a 10-frame hive The two half colonies were then united together and placed on a weighing machine. An ordinary colony of average strength was placed on another machine, and the daily gain or loss of weight of each was taken at 7 a. m. The result of the comparison is shown in Chart 3. It will be noticed that the system colony made higher daily gains than the regular colony up to the time that the queen-cells were destroyed, and again after one of its young queens began to lay, but that during the intervening period, its work slackened. Several ways of reducing this loss of morale or of shortening its duration were planned for next year. One of the most hopeful is to cage a newly emerged virgin on each side when, or soon after, the old queen is caged or removed, and to liberate the virgins when the cells are destroyed. Another is to keep the old queen in a super next the brood chamber or in the upper half of a double brood chamber for at least eight days.

It was also decided to try to discover some quick and easy method of detecting colonies that are preparing to swarm, and, among other ideas, the following are to be tried:

1. Supporting the brood chamber on a light stand so that the floor

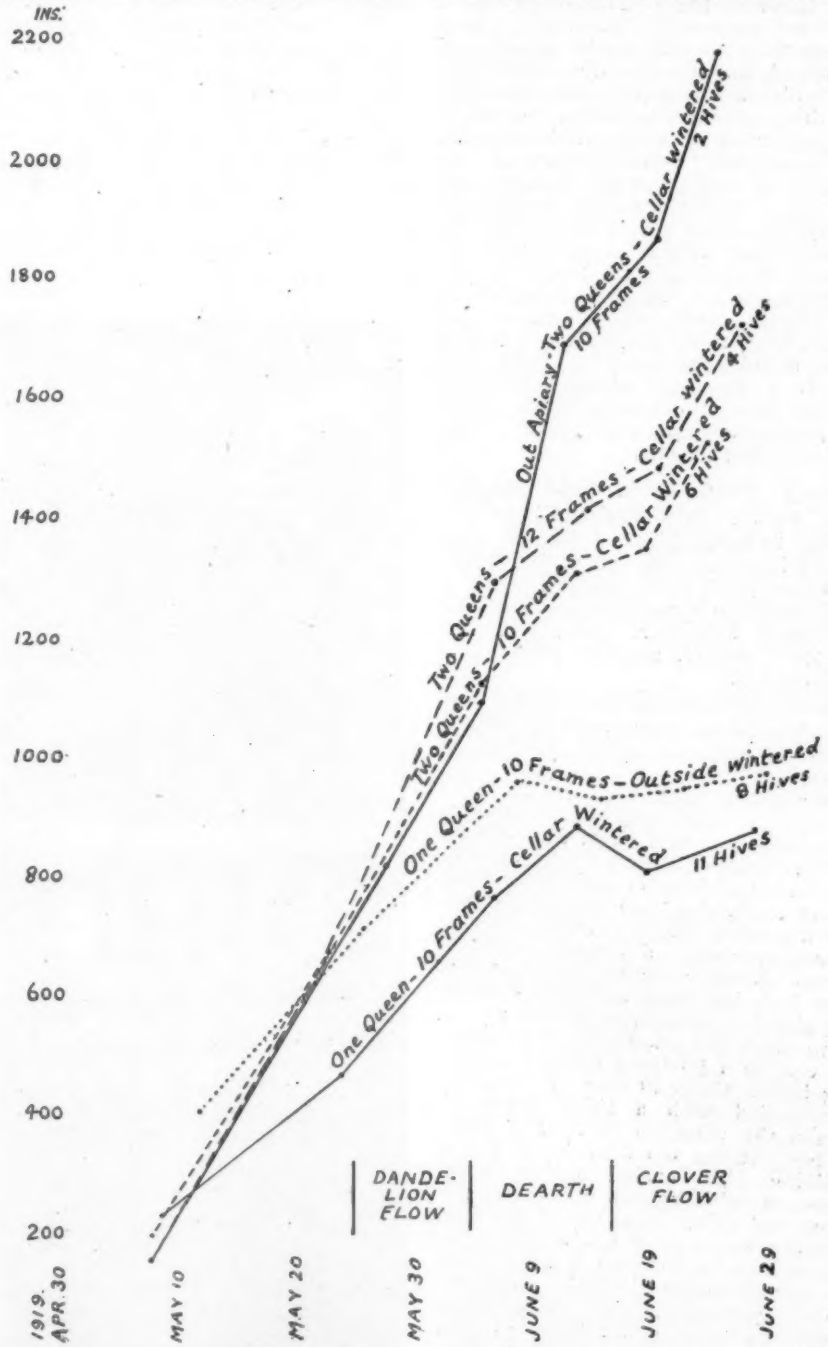


Chart 2. Comparing estimated quantity of brood that had reached capped stage, developed from hives that had started the season with one queen and with two queens. The height and width in inches of the area bounded by cells of capped brood on one side and of each comb were multiplied together. All the queens were given plenty of room to lay.

may be lowered and queen-cells looked for by hand mirror between the bottom-bars of the frames. 2. In a double brood chamber, lifting the back part of the upper half and looking for the queen-cells between the bottom bars. 3. having a slot between two horizontal bars in one of the combs on which cells will be built. By treating only those colonies that are preparing to swarm, the loss of morale will be further reduced and the work of treatment reduced, and spread over a longer time.

Out of eighteen colonies that were requeened at the central apiary by the system method described above, four swarmed or attempted to swarm. It was found, however, that in three of these cases there was a third queen-cell that had been missed when the cells were destroyed, and in the other (attempted only) a drone pupa was found in a third queen-cell. When the white honey crop was removed in early August ten colonies out of the eighteen had young queens and brood on both sides, four on one side only, and four on neither side. In some cases virgins were run in instead of cells left or given, and in four cases the old queen was placed in the top super, with a separate entrance. Out of these four colonies two failed to requeen on either side. It is a question whether the old queen is worth keeping unless she is a particularly good one, except for maintaining morale.

Honey Produced at the Central Apiary, 1919, Spring Count

Six 10-frame hives, 2 queens, wintered in cellar, requeened by system, average yield each, 189 pounds.

Eleven 10-frame hives, 1 queen, wintered in cellar, queen-cells destroyed weekly, average yield each, 178 pounds.

Eight 10-frame hives, 1 queen, wintered outside, queen-cells destroyed weekly, average yield each, 167 pounds.

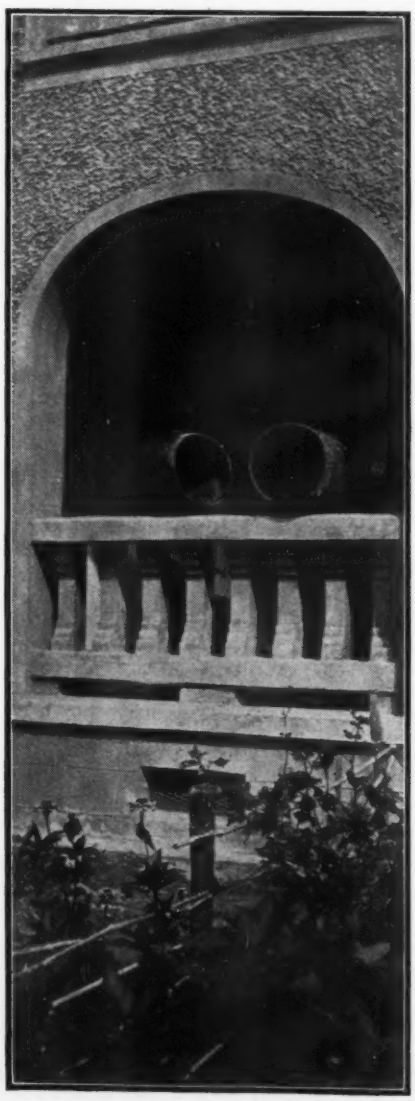
Four 12-frame hives, 2 queens, wintered in cellar, requeened by system, average yield each, 228 pounds.

It is hardly expected that outside wintering will be so satisfactory for hives containing two queens as cellar wintering, but it is being tried in some specially designed 4-colony cases. Another method of wintering that is being tried and seems more hopeful for outapiaries in the north, is to place the colonies in a building (it can be a portable honey-extracting house about 10 feet by 12 feet), surrounded with a thick layer of straw, the windows to be left open to prevent the sun from heating the building in early spring, and screened with cotton to keep out snow and rain. The use of the extracting house as a house-apiary in winter has been found a good plan for a small apiary of regular colonies.

The contention that this two-queen system may not build up the colonies strong enough for the honey flow is met by the following considerations: 1. A hive that has been requeened with two queens in July goes into winter considerably stronger in young bees than one containing only one queen. 2. The colonies in which the queen fails on one side reach full strength for winter and can spare bees or brood in spring to strengthen the weakest of the half colonies. 3. The half colonies can be united at the beginning of the honey flow if necessary. This was done in four out of the six 10-frame hives at the central apiary in 1919. 4. The evidence has shown that when the principal honey flow does not begin until about four weeks after the commencement of the swarming season, as at Ottawa in 1918, the half colonies will build up plenty strong enough for it.

At present the two-queen system is recommended only for localities like Ottawa, that have the last-named condition in average years but some of its developments and modifications are expected to have a wider application. It is expected to produce particularly good results in places where the principal honey flow comes from fireweed or other July sources, and with the larger hives that are now receiving increased attention, the 10-frame Jumbo and the 12-frame Langstroth. It also includes the essential features of the modern treatment of European foulbrood.

(In the April, 1919, American Bee Journal, Mr. Sladen describes this system. The bees on the two sides of the division board meet in the supers through queen excluders until the last super is removed in the fall. From this time on the two divisions are entirely separated.—Ed.)



Chinese basket hives.

Bees in China

Mr. Frank C. Pellett:

Dear Sir: I am an amateur apiarist with a colony of 20 hives of Chinese bees. The native queen is, however, not as good as the Italian, and I have ordered six Italian queens from California, but they have not been delivered yet. I intend to replace all my Chinese queens with Italians next year.

I enclose two snapshots which may interest you. One shows 4 of my colonies housed in the English ("W. B. C.") hive. The climate here is subtropical in summer and the thermometer ranges from 80 to 106 degrees in the shade; so a shed is absolutely necessary. Our winters are bitterly cold, but I do not move my hives into a cellar—they remain in the open the year around.

All my colonies were purchased from Chinese farmers and I had considerable trouble in obtaining them, as the natives regard bees as "joss pidgin," i. e., symbols of good fortune. They think whenever they sell bees they are selling away their "good luck." They keep bees in baskets generally, suspended against a wall, and one of my pictures shows a couple of these basket hives after I had transferred the colonies. Occasionally bees are housed in wooden tubs or boxes. They know nothing about modern beekeeping methods.

The Chinese bee is the gentlest of its species, rarely using its sting. I never use a smoker, wear a veil or gloves when handling my colonies.

The first book I ever read on beekeeping was the one you wrote, "Productive Beekeeping," one of the Lippincott series. I purchased this in China.

C. G. GOLDING.

Wiring Frames

In the June issue of the American Bee Journal E. S. Miller gives a method of wiring frames that appealed to me very much, and I found on trial, that he was on the track of a good thing. After a little experimenting, I believe I have evolved an improvement of his method.

I wire the frames in the usual manner, leaving slack in the third wire from the top, so that the wire can be carried up to the center of the top-bar and wound around the head of a five-eighth inch cigar box nail that is driven in at the edge of the large saw kerf or wedge pocket, as the case may be, as Mr. Miller does, and then

fasten the end as usual, and then drive in the nail in the top-bar to tighten the wire. Before wrapping the third wire around the nail I take out as much slack as possible in wires No. 1 and 2.

This gives a wire at the bottom to prevent buckling of the foundation. At the same time I obtain the advantage of the points of contact of the crossed wires. This method is nearly as rapid as the usual one, and the imbedding of the foundation can be done with bell transformer on the lighting circuit or with an electric iron circuit.

A. MESERVE.

Honeydew

By Alex. D. MacGillivray

THE thin, clear, sweetish, glutinous substance extracted in dew-like drops by certain insects is known as honeydew. It is extruded from the rectum of the insect through the anus and is considered as the excretion of the insect. That this excretion is entirely excreta is open to question.

The early students of plants and animals differed decidedly as to the origin of honeydew. The botanists put forth arguments that seemed to show absolutely that this watery substance found upon the upper surface of leaves during the summer was excreted by the plant. The argument was supported by such eminent scientists as Liebig and Hooker. Even some entomologists thought it was excreted by the plant. The arguments of these workers were based upon theoretical considerations and it was impossible for such arguments to overcome conclusions based upon actual observation. For many students of insects, even as early as the time of De Geer (1778), had observed the actual passage of the bubble-like drops from the anal opening of different species of plant lice. The insect origin of honeydew has been confirmed so many times that it is now an accepted fact. The ordinary observer, if he so desires, can readily demonstrate its origin during the summer months by observing some plant lice under a lens giving a slight magnification. The fact must not be overlooked that certain plants do exude substances, but they are always of a very different character, usualiy thicker and more opaque than honeydew.

The insects that produce honeydew belong to the order Hemiptera. To this order belong the insects which the entomologist designates as bugs, or true bugs. Some of the more common are the bedbug, the stinkbugs, which give the acrid taste to berries, the seventeen-year locust, aphids or plant lice, and scale insects. All the insects included in this order are sucking insects. Their food is either the blood of animals, as with the bedbugs, or the sap of plants, as with the plant lice. Their mouth parts, because of their sucking habits, are greatly changed from those of a caterpillar or a grasshopper, which are for biting. The lower lip is modified into a comparatively long cylindrical projection, the rostrum, which consists of three or four segments. It also has a deep furrow on the upper side. The sides of this furrow are usually adjacent, forming a tube which can be opened on one side or held securely closed at the will of the insect. The two pairs of jaws are modified into four long bristle-like structures. These are extruded through the mouth and through the furrow in the rostrum. The bristle-like mouth parts are longitudinally furrowed and firmly folded together so as to form a slender tube with an extremely fine lumen, much smaller than the lumen in the needle of an ordinary hypodermic syringe. These closely folded bristles, which are about as long as the body, or four or five times its length, are known as the rostralis.

When the insect gets ready to draw up sap, the rostrum is held at right angles to the body and the bark of the plant, and serves as a support for the rostralis, which extends through its central furrow. The free end of the rostralis is sharp and with the support given by the rostrum, the insect is able to puncture the bark of the plant and force the rostralis into the tissues of the plant where there is an abundant supply of sap. Located in the head and associated with the rostralis, there is an efficient pump. This makes it possible, once the insect has its rostralis fixed in the tissues of the plant, to pump the sap into its pharynx, where it is mixed with the excretions from the salivary glands and digestion is begun. The great length of the rostralis in many insects of this group is probably to permit slight movements of the insect without disconnecting it from the plant or breaking off the end of the rostralis in the tissues of the plant.

The number of families of Hemiptera, of which the species produce honeydew, is not large, only six.

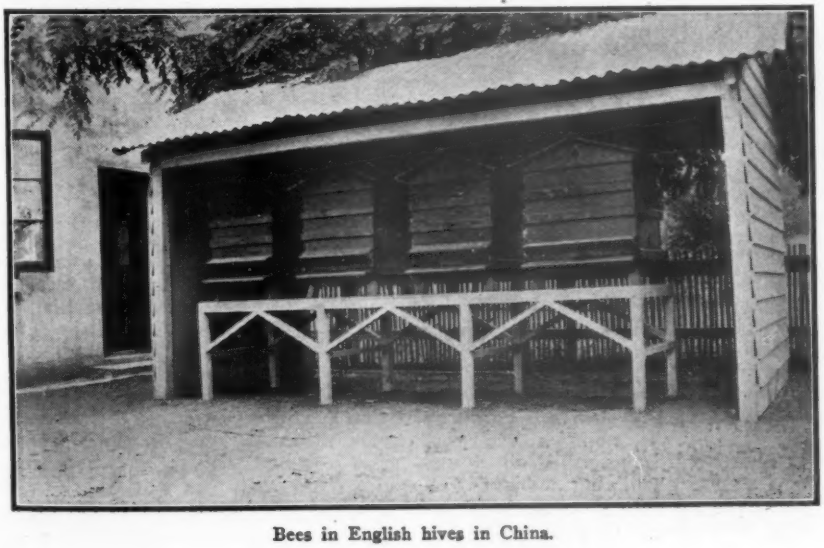
1. The family Membracidae, the Tree hoppers or Brownie bugs, include only a few species which produce honeydew, and these produce only a small amount. The abdomen is elongated, the posterior portion is tubular and the anus is located at the free end of the tube.

2. The family Cercopidae, the Frog-hoppers or Spittle insects, includes species all of which produce honeydew. It is said of some of the exotic species that five or six dozen individuals, will produce a quart in an hour and a half. They are the insects that produce the small, frothy or spittle-like masses in the angles of plants. If this mass, which is honeydew mixed with air, is pushed aside, an insect will be found. The froth is produced by the insect keeping its abdomen in motion and mixing small air bubbles with its honeydew as it is excreted.

3. The family Psyllidae, the Jumping plant lice, often produces great quantities of honeydew. Slingerland, in writing of the pear tree Psylla, says: "It literally rained from the trees upon the vegetation beneath; in cultivating the orchard the backs of the horses and the harness often became covered with the sticky substance dropping from the trees. It attracts thousands of ants, bees and wasps, which feed upon it."

4. The family Alcyrodidae, the White flies, are mainly tropical or sub-tropical species, and in these regions produce great quantities of honeydew. The species found in temperate regions, while numerous in species, are rarely numerous in number of individuals, and do not produce a large quantity of honeydew.

5. The family Coccidae, the Scale insects, Mealy bugs, or Coccids, are likewise more abundant in tropical and sub-tropical regions, where the species of certain groups produce enormous quantities of honeydew. It is from this that much of the inferior grades of imported honey are produced. Some of the species of Coccids found in temperate regions produce large quantities of honeydew just prior to or at the time they are producing eggs or giving birth to young. In the Coccidae all the honeydew is produced by the females, young and adults. Such species as the San Jose scale or the oyster shell scale do not produce honeydew. It



Bees in English hives in China.

is of interest that the manna mentioned in the book of Exodus is the honeydew of a coccid, **Gossyparia mannifera,** which occurs in many parts of Asia Minor. This substance is called "man" by the Arabs. In its natural state it is like honey and is still used for food.

6. The family Aphidae, the Plant lice or Aphids, occur abundantly in tropical and temperate regions and many of its species produce large quantities of honeydew. A very large portion of honeydew produced in temperate climates is the product of Plant lice.

The amount of honeydew produced by different species varies greatly. Some of the subterranean species produce only small quantities, while many of the arboreal species produce a considerable volume. The females of the latter bear on the upper side, near the caudal end of the abdomen, a pair of tubes, the nectaries, from which the early entomologists believed the honeydew was produced. It is only the females in the Coccids and plant lice that produce honeydew—females as adults and as young, but in the other families named, its production is limited to the young.

The insect, after it has attached itself to the host plant, is probably busy a great part of its time in sucking the sap of the plant. This sap passes into the insect's alimentary canal, where it is modified by the secretions with which it is mixed from the salivary glands and the digestive glands of the alimentary canal. In those plant lice excreting a considerable abundance of honeydew, the posterior portion of the rectum is greatly enlarged and swollen. This swollen portion is lined with large active cells. It is quite likely that the honeydew is an excretion elaborated and poured out by these enlarged cells, and not simply the excreta of the insect, as it is generally stated.

(To be continued).

The Large Hive Idea

By A. F. Bonney

BEEKEEPING is in a state of transition. It has not been many years since every effort was being bent to the production of comb honey, in sections, and, in some States, chunk. Owing to the difficulty of getting bees to go into sections in seasons of light honey flow, and the vast amount of swarming incident to the eight-frame hive, beekeepers began producing more extracted honey, and the war coming on and the demand for honey increasing tremendously, the ten-frame hive, and in many cases two of them, were substituted for the eight-frame, until now the big hive idea is gaining ground very rapidly, the Jumbo and, with others, the long hive.

Owing to the fact that thousands of beekeepers are fully provided with the ten-frame Langstroth hives, they are going to be slow about buying others, either the Jumbo or the Long, and, as I am in that position, I began studying how to bridge the gap, with the following result:

I am now preparing some ten-frame hives by adding a couple of inches to the depth of them. This is a very simple matter, as all one has to do is make a frame of stuff the thickness of the walls of the hive, bore holes about one-eighth of an inch through them edgewise, and fasten them onto the bottom of the hive with long wire nails. The bees will do the rest. If, now, Jumbo frames are put into them I shall gain more than 300 square inches of frame room, 36 inches to each frame, and nine frames, as I long since abandoned the narrow (1⅜ inch) spacing. This is the equivalent of two full Langstroth frames. However, there is more advantage than the mere gain in space, for while I have made an eleven-frame hive of a ten-frame, I have not spread sideways, but down, which is what the bees want, for they will work up and downward indefinitely, while loth to go sideways.

This, however, is but a step towards the large hive which, I firmly believe, is destined to predominate in a very few years, and a great incentive to the change is that we do not have to discard our ten-frame hives, or, for that matter, the eight-frame equipment, for they may all be used as extracting supers.

I have tried thoroughly the use of two ten-frame hives for a brood-chamber. In some cases it worked out all right, but in others the bees would get into the upper hive and refuse to go down. This called for a change, which I generally made by Demareeing, putting one frame of brood below with the queen, which called for work which, in many cases, I hope to avoid by the change in the ten-frame hive.

In this connection, the metal honey comb is, I believe, going to solve the problem of distorted foundation. This, the metal comb, is to be another factor in our transition, even if it reduces the demand for wax and sets the makers of foundation to scratching their heads.

The object of all laws is the greatest good to the greatest number, and all our efforts in beekeeping should have the same idea.

Buck Grove, Iowa.

Full Sheets of Foundation to Swarms

On page 344, at the bottom of the center column, I wrote: "Never give full sheets of foundation to a swarm." This brings a lot of enquiries. The statement is too sweeping. What I meant to say was: "Never give a swarm all full sheets of foundation." If you do, the bees are likely to break it down with their weight before they work upon it, even if wired. It is advisable to give the swarm a comb or two already built, upon which most of the bees will hang, while the foundation sheets are being worked out. If you have no empty combs, just exchange two sheets of foundation for full combs from the hive that has swarmed, or from some other hive.

In writing this, I am speaking for warm summer climates like that of Illinois. In cool climates it may be all right to hive a swarm on all full sheets.

M. G. DADANT.

Protecting Bees in Winter

A good way to protect bees in winter is to cover the hives with large pasteboard boxes. Fill an empty super about half full of chaff, and place on top of the hive, then put on the regular metal hive cover. Get the boxes about 3 inches larger than the hive. (Those in which bakeries ship bread are just right). Cut out a place in the box to correspond with the entrance to the hive, then fill in all around the hive with straw, not pressed in but loose, letting it settle of itself, and filling again when necessary. No matter how cold it gets, this will protect the hives well, and is very little trouble. The boxes can usually be found at any bakery to which bread is shipped, and cost little if any money. Of course, the bottom must be cut from the box, and just the sides used.

LILLIAN DAVIDSON,
Blue Springs, Neb.

Beestings and Horses

In the November number of your Journal, on page 384, "New Jersey" enquires what to do if a horse gets badly stung.

Fill up the copper, or whatever vessel the wife uses for boiling the clothes in, and get the water hot as quickly as possible. Then get some blankets, rugs, or anything of a like nature and soak in the water, wringing out the water, and cover the horse with them as hot as the animal can bear them. As fast as they cool keep renewing them with hot ones, and the animal will get instant relief and probably recover.

B. BLACKBOURN,
Sub-Editor Australasian Beekeeper.

The Bee as a Reformer

By K. G. Devine

"MAC" was a Boston boy, a neglected orphan, who from lack of decent environment and proper training became shiftless and incorrigible. The Children's Court, where he finally landed, decided that he should go to the "Farm," a State institution.

For three years he was the despair of the farm authorities, who labeled him "hopeless." One day he was sent to the State line to bring home some colonies of bees for the new apiary. He brought them home and was badly stung in so doing. The sting of the bees wounded his pride more than it did his flesh, and he determined to subdue the insects.

From that time on he had sole charge of the hives and became so infatuated with his work that he begrudged the time spent in eating and sleeping. "Mac" had never heard of

the persistency of the spider which taught Robert Bruce a lesson that saved Scotland, but the persistency, patience and industry of the bee was the regeneration of the boy. He cultivated himself in cultivating the bees and so improved his record that his former detractors praised his industry. He made the farm apiary the best in the Berkshires and when he left was sought after by every beekeeper in the community.

Massachusetts.

A Soldier's Bees

I am sending you a picture of what is left of my apiary of 50 stands of bees to this date. We are having dry weather, but I think we will have a light honey flow this fall of heartsease. I lost quite a number of my bees in 1917 and 1918 for the reason that I could not take care of them. I was in the U. S. Army from September 19, 1917, till March 11, 1919. I was lucky to be discharged in the spring, so I could put my yard and bees in shape. I have reared quite a number of fine queens this summer for my own use. I have been in the beekeeping business for 9 years and started at the bottom of the ladder. My first investment was $1.50, with which I bought one stand of bees which a farmer could not take care of, and the first crop made 75 pounds, which put me where I am today. I would not take $700 for my yard today, and the bees paid for it.

H. F. CARRILTON.

Illinois.



Apiary of H. F. Carrilton on his return from the army.

Some Statistics Relative to Beekeeping in Michigan

By B. F. Kindig

IN connection with the work preliminary to the organization of a co-operative Honey Producers' Exchange, it seems desirable to get as comprehensive an idea of the status of beekeeping in the State as possible. With that end in view, 1,600 letters were sent out to good, bad and indifferent beekeepers in nearly every county in the State. The tabulation of the replies received follows:

Number of colonies per beekeeper	Number of beekeepers in this class	Average number colonies per beekeeper	Total average yield extracted honey	Total average yield of comb honey	Average yield per colony	Per cent comb honey produced	Total number of colonies	Returns per colony yearly	Returns per beekeeper per year
1 to 9, inc.	295	4.3	9,779	19,390	22.9	67%	1,273	$ 7.25	$ 31.62
10 to 24, inc.	186	16.	43,836	38,804	28.5	47%	2.868	8.55	136.80
25 to 49, inc.	132	34.	99,995	61,286	36.	35%	45,535	10.25	351.39
50 to 99, inc.	89	65.	203,125	59,355	45.	23%	5,831	12.27	797.55
100 or more	85	200.	795,827	116,888	57.	12%	15,919	15.06	3,012 00
Total	787	38.6	1,152,562	295,723	46.6	20%	30,426	$12.87	$496.78

One of the striking parts of the above table is that it shows that less than 11 per cent of the beekeepers are producing 63 per cent of the honey. Some may feel that this list contains only the more up-to-date beekeepers. It is only fair to say that the list circularized was made up largely from a list of persons who have attended one or more beekeepers' meetings of one form or another. So, the standard of interest is likely somewhat higher than the average for the State. However, there is represented in the above list only one beekeeper having more than 400 colonies, and he has but 500. So, while the proportion of small and indifferent beekeepers may be too small, it must also be remembered that many of the larger ones, for one reason or another, apparently do not care to give data on their business.

It should also be noted that the beekeepers having less than ten colonies and receiving the smallest return per colony are the ones producing the highest per cent of comb honey. The percentage of comb honey gradually falls as the average number of pounds per colony rises and as the total returns per colony increase. Doubtless this should not all be charged to the production of comb honey. It is a well recognized fact that the poorest and the best beekeepers are the producers of comb honey. Usually, the producer of extracted honey is a better beekeeper than the poorest of the comb honey producers, but a poorer producer than the best of the comb honey producers. It is easy to be an extracted honey producer in a mediocre way and still make a fair return on the capital and labor invested.

From a perusal of this table, it appears that professional beekeeping really begins after one has passed the number of 100 colonies. It is significant that the number of beekeepers having from 50 to 100 colonies is only slightly larger than the number having 100 or more. Many of those having from 50 to 100 colonies are in their transitional period. They are undergoing the metamorphosis which will change them from side-liners into professional beekeepers. It seems that the average person must have 50 or more colonies before he gets the vision of the possibilities of beekeeping. When they really get that vision they do not long remain in that class. One of the greatest services that the Extension men and Inspectors can give to the State is to assist the promising beginner to focus his mind on the possibilities of commercial beekeeping. A lot of our beekeepers with less than 50 colonies need to be given a violent shock to wake them up to the fact that beekeeping has as great possibilities as poultry, fruit or general farming.

In the above table the 702 beekeepers having less than 100 colonies produced an average of 43 pounds per colony, while those having over 100 produced an average of 57 pounds per colony. That difference of 14 pounds per colony is a matter of serious importance. Why? It seems to me the whole cause can be ascribed largely to ignorance. I don't mean that these beekeepers are not intelligent persons and successful in other lines, but that they are more or less ignorant of the essentials to

good beekeeping. There are many individuals in this class that are just as good beekeepers as the professionals, but the average of knowledge is not so good as the average among the professional beekeepers. Beekeeping has charms, financial, social and intellectual—sufficient to challenge the attention and admiration of our best men. A strong arm and a weak mind are the poorest possible combination in the bee-yard.

The last two columns are of particular interest. As one looks down the column headed "Returns per colony," one can picture in the mind's eye the gradual development of a beekeeper from the nervous, fearful, self-conscious amateur, making but a meager return per colony, to the extensive, successful and too often self-confident professional.

The only moral in this table is by comparison. Size up your business and see whether you are an average beekeeper. But don't be satisfied with being an average. If your territory is at fault, move. If your methods are at fault, change them. If you are not informed, get informed. The most successful men give their business their constant thought and attention.

Michigan.

To the Rescue of Dr. Miller

By W. S. Pangburn

ON page 417 of the American Bee Journal for December, under "Criticisms," by C. E. Fowler, Dr. Miller calls for help on the question as to whether carbon disulphide will kill the egg of the moth. Mr. Fowler claims that it would not.

I am writing this article in behalf of Dr. Miller, for whom I have profound respect, and hope it may be of some interest to other beekeepers as well; but if I might say some little thing that would be of any help to Dr. Miller, I would only be too glad to do it for what I have gleaned from the many helpful articles from his pen.

From my own experience with carbon disulphide, which has been the past 10 years, and in that time fumigating thousands of combs, I do not think Dr. Miller made any mistake when he said that only one treatment was necessary to kill both moth and egg. . I add, if done thoroughly.

In all the time we have used it, and never having had to give any set of combs the second treatment, seems to me at least to prove Dr. Miller was not wrong.

In the past year or two a number of articles have appeared in the bee journals on the subject of treating combs with carbon disulphide, and without exception the claim has been made that two treatments were necessary to do the business, and get both moth and egg, and nearly all the instructions were to pile the bodies to be treated on top of one another several stories high, and place the carbon in a dish on top of the pile, and cover tight. A mighty indefinite set of instructions I would say, especially for a beekeeper who had not used the drug before, and knew little of its action. I do not know that I have seen in any of these articles a definite amount of the drug to be used given, for a certain number of supers or bodies.

In reading the different articles I have often wondered why so many found the second treatment necessary, and we never treated but once, and never a failure in 10 years.

There is only one good reason that we can think of as to why this second treatment has been found necessary, and that is, the job has not been done thoroughly enough, and the dose in most cases has been guessed at.

We will give the method we use in treating out combs; it is different from any I have ever seen given.

First scrape all propolis from top and bottom edges of supers or bodies in order to get a good fit between bodies and retain the deadly gases.

Do not be satisfied with this, but put two thicknesses of newspaper between each set of combs to be treated, which will insure a good tight joint, if your hives are made as they should be.

On top of each set of combs place a cloth about 10 inches square (doubled), and pour a tablespoonful of carbon disulphide on the cloth and cover with newspapers. Then place another body on top, and so on as high as you wish to go.

We believe the success of the treatment lies in confining the gases as long as possible, and giving each set of combs the same strength dose, which cannot be done in piling up bodies 6, 8, or 10 high, with perhaps open joints at each body, as is the case if the edges are not scraped of propolis and made to fit and the carbon disulphide on top of these piles.

The fumes of the drug are very heavy, and will settle to the bottom of the pile quickly, which gives the upper stories a poor chance of being treated as thoroughly as they should, while the bottom ones may, or may not, be treated sufficiently.

In treating combs by this method for 10 years, combs that developed millers could be seen, along with worms from the size that could scarcely be seen with the naked eye, to those almost ready to spin cocoons, also combs wet from the extractor that had as yet shown no signs of moths, that it would hardly be possible that "all eggs were hatched before treatment."

We never think of looking at a set of combs after treating until we wish to use them, if it is not in a year or two, and we have never seen the works of moths in any combs treated. Of course we keep them covered tight after treatment, which is necessary that more millers do not get in and start up another crop.

We took down a pile of combs this season that were drawn in 1913, which were never used or treated since they were piled up, and they were in perfect condition.

Sometimes, some little thing is the turning point to success, or failure.

Iowa.

(Our columns are open for more information on this matter.—Editor.)



(Before.)
Apiary in box hives in British Columbia.—Photo by F. Dundas Todd.

Excerpt From the Review of Applied Entomology, Nov., 1919, Agric.—Paratyphus in Honey-Bees.

Skandinavisk Veterinar-Tidsskraft, ix, 1919, pp. 25-40-45-60.

"An acute enteritis of bees in the vicinity of Copenhagen has been found to be due to Bacillus paratyphi-alvei, the bees showing symptoms of debility, inability to fly and sometimes diarrhoea, and dying in from 24 hours to a few days. The disease was introduced with purchased infected bees, and in eight beehives, 50 per cent of the bees succumbed in a fortnight. Bacillus, paratyphi-alvei

was found in great numbers in the gut of all the infected bees, often almost as a pure culture, and was also found in the blood. It is not identical with the form of B. paratyphi found in man and domestic animals. The feeding of healthy bees and of vespa with pure cultures dissolved in 5 per cent sugar solution showed positive results, but mice, guinea pigs and rats were not susceptible. While the organism is not normally found in healthy bees, it has occurred exceptionally. In these cases the infection has possibly been present in such hives, and it is certain that many cases of paralysis and dysentery recorded in bees have been due to paratyphus.

"This somewhat infectious and malignant disease can be spread (1) by purchase of infected bees and of apparently healthy bees that originate from a hive that sometime previously has been attacked by the disease; (2) through foreign infected males; (3) through beekeepers carrying the infection from attacked apiaries to healthy ones; (4) through infected frames, tools or hives. The author therefore proposes measures controlling the purchase of bees and the prohibition of the importation of foreign bees and queens."—(Supplied by William Hugh, President of the Beekeepers' Association of British Columbia.)

(This is another name for the cause of May disease or paralysis. We are not wanting for names. "Bacillus depilis, bacillus Gaytoni, bacillus paratyphi-alvei"! But what we need worse than names is to know how the trouble originates and how to cure it. It will come by and by.—Editor.)

Beekeeping in Costa Rica

By W. B. Gehrels

(Continued from February.)

Our second year here proved to be abnormal. It did not rain more than one-third the usual amount. About the first of October the honey flow started, but was followed quickly by a three weeks' rain, and before the honey flow started up again, after the rains ceased, the bees had used up their stores o converted them into brood, so that we had to do some feeding. For feed we bought brown sugar; this is sold in cakes, as it is molded into clay molds at the cane mills. This sugar we boiled, adding some water. When the syrup thickens, cool off and stir; it will grain very fine and when cold, if it is just right, it can be very quickly rubbed into empty combs. This feed excited very little robbing and gave good satisfaction for us. Bees do not seem to be inclined to rob as badly here as in the States.

Towards the middle of November the honey flow opened up better again, but not so good a the previous year. The lack of rain during the winter cut down the flowering of the trees considerably, but by the end of the second year we had increased to 550 colonies and produced 10,000 lbs. of honey. The largest part of this honey was not inferior to the best honeys produced in the States, such as clover, orange or catsclaw. A small part of the honey, that produced from one variety of mangrove, had a slightly salty taste, but was white in color. The bees did not gather any honeydew, or any honey that was dark in color or of a strong flavor, but the largest part of the honey was of a distinctive, different flavor from the honey produced last year. As the largest part of our honey comes in the dry season, the honey is very thick and heavy, so that it will hardly run out of a bottle, but on the other hand, it very seldom candies here on the coast. In the higher altitudes in Costa Rica honey candies, however, much the same as it does in the States.

We have heard of the cheap honeys from the West Indies and Central and South America, which, of course, discount the prices of the article produced down here. There is some ground for this kind of talk, and the cause is nearly always the way the honey is handled, packed and shipped, and again the way it is handled after it is received and finally put on the market in the country where it is consumed. I have sampled bottled honey put up in the two countries that are the most advanced in beekeeping—our own United States and England—that was so much inferior in color and flavor to the honey produced here that it would not admit of comparison. I have bought the bottled honey that I mention, in Panama.

As I am writing this, I have my typewriter on some empty bee hives under the shade of a palm tree, and the bees are coming in clouds over my head heavily loaded with honey from the forest, and the air is full of the sweet-smelling fragrance of ripening honey in the hives.

Beginning with six colonies two years ago, the bees have, with our help, more than made our living for a family of eight members, not figuring the increase to 550 colonies. My good wife and daughters are my helpers; my son is now in the United States attending a mining school.

HONEY PLANTS

It is only possible to get an incomplete list of the honey-producing plants of Costa Rica, as we have been in the country only two years. Some plants have escaped our notice, and there are undoubtedly many other good honey plants in other parts of the country. I will just give them here as I find them in my memorandum book, without any attempt at listing them alphabetically.

The maranyon produces honey, fruits and nuts; blooms from November till April.

Tamarind—Honey and fruit, April till September.

Aguacate—Honey and fruit; December and January.

Mango—Honey, fruit and pollen; November till April.

Marango—A tree used for fence posts; produces honey; blooms all year round.

Cocoanut and cojol palm bloom all year round; produce honey.

Guava—Fruit and honey; not important; blooms all year.

Oranges and limes—Usually bloom twice a year; produce some honey.

Bananas—Fruit and honey; not important; bloom all year.

Three or four varieties of wild plums; some have very good fruit, all produce some honey; bloom from December till March.

Nispero—Fruit and honey; blooms several times a year.

Coffee—Honey; not important; bloom period too short; April.

Cacao—Honey; not important; April.

Balsa, espavel, cedar, genisero,



(After.)
Apiary of J. H. Alexander, of Ladner, B. C., who bought the Chinaman's bees and transferred them to hives.—Photo by F. Dundas Todd.

guanacaste mora, mahogany and almond are the commercial lumber woods. All produce honey; some are first-class honey yielders. The cedar has no resemblance to the cedar in the States except the lumber. The shape of the tree, the leaves and the blossoms are altogether different from our northern cedar.

The calabash or gourd tree grows everywhere and is an important honey plant. It blooms about six months of the year. The gourds that grow on these trees are very durable and are used by the natives for drinking cups, for dishes and for water containers, and they are also used in making the marimba, the sweet-toned Indian musical instrument. The calabash flowers and fruit come right out of the stem of the tree and large limbs. Seemingly the bark bursts open and the flowers come out.

Bread-fruit trees and the wild fig tree are said to produce honey, but I have not seen bees on them while in bloom; perhaps something else was producing honey at the time that was more to the bees' liking.

Among the good fruits that produce honey, there are two kinds of zapote, the zapotia, the annona, the mamong, the kaki fruit, the loquat and the nancitas. In fact, I find a new fruit every few days that yields honey. The papayas I think I have mentioned before.

The corn is very valuable as a pollen yielder. There seems to be a dearth of pollen here sometimes.

The mangrove, of which there are more than a dozen varieties, bloom the greater part of the year. Some yield considerable honey.

Most of the plants and trees of Costa Rica, except the grasses and some garden vegetables, yield honey. Among the vegetables the chayote produces honey and pollen. The gherkin, or wild cucumber, produces considerable honey during the rainy season. Mesquite, catsclaw and wild cotton also give us some honey.

A peculiar thing — flowers will often continue secreting honey after they have fallen to the ground, and bees will continue to work on them; children sometimes get stung by stepping on them. I have noticed this with the flowers from the calabash, the marango and the pampaya.

Costa Rica.

Southern Beekeepers Affected by Wisconsin Apiary Law

The attention of the beekeepers of Alabama and several other Southern States which do not provide for apiary inspection is called to the new Wisconsin law which went into effect last July.

Under this statute beekeepers and transportation companies are prohibited from accepting for delivery in Wisconsin any bees, comb, or used beekeeping appliances without a permit from the Wisconsin Inspector of Apiaries, or an inspection certificate from an official Inspector of the State of origin attached to each package, crate or bundle containing the same.

It appears to be customary for the Alabama dealers, at least, to attach affidavits to their pound packages, stating that the honey used in making the candy has been diluted and boiled. Our experience has been that the ordinary boiling is insufficient to sterilize honey, and that foulbrood sometimes develops as a result of the introduction of bees in pound packages, unless they come from an apiary free from disease.

It is now too late, of course, to provide for inspection in a State in which no arrangements of that kind have been made. Consequently, it will be necessary for all dealers who are unable to furnish an inspection certificate to secure a permit from the State Entomologist of Wisconsin for this purpose. A copy of this permit may then be attached to each pound package, and a list of all the customers of the permittee filed with the State Entomologist. It is understood that where bee diseases are apparently introduced in pound packages, permits will probably be refused in future years to the apiaries from which the bees were received.

All shipments should also be accompanied by the affidavit form now used. Applications for the needed permits are to be made to S. B. Fracker, Acting. State Entomologist, Madison, Wis.

Jumbo Hives in Dadant Style

By F. Dundas Todd

TALKING to Mr. C. P. Dadant at the meeting of the Chicago and Northwestern Beekeepers Association in the year 1908, I remarked that some day I was going to try out a Dadant or Quinby hive. Very earnestly Mr. Dadant remarked: "Mr. Todd, we never urge anybody to use our style of hive, but I will assure you of one thing, that if you ever do try it, you will never regret so doing."

At that time I had on hand a complete equipment for about 50 shallow divisible hives, and no inducement to add to the number, nor did I have any further need for nine years, so my intention was for a long time unfilled. As I had so many shallow frames on hand, and a four-frame extractor with twelve-inch baskets, I felt I could not afford to follow exactly the dimensions of the Dadant hive, so I began by compromising on the ten-frame Jumbo, but following closely the general design of the Dadant. Instead of starting with one, I made five, getting them all filled the first season. In one of my letters to Mr. Dadant I happened to mention what I was doing, and he urged me to let him know my results.

The first season's wintering of these hives was just average with my others, but I considered I had better say nothing until I had further experience. One thing however that I did appreciate very much was the greater ease in handling the colony. With our long building up season, four months , we get the kind of colonies most beekeepers dream about, but very seldom see. At the beginning of May a good beekeeper frequently has a ten-frame Langstroth packed with bees, so a second story is in order, when a good queen will do a land office business. In 1919 we had a rather cool, wet April, yet, before the end of the month, several men stopped me on the street to tell me how well their bees were doing. One man with six colonies said his best hive had fourteen solid combs of brood, his poorest, six. Nine frames of brood are not uncommon. Our honey flow is not due until July, so think of the backbreaking labor involved in examining regularly these double deckers for two months. As a bee inspector I know what it means. With a Dadant hive big enough, the brood chamber is all in one story, so the cover is the heaviest thing to lift until the honey flow is on. By the way thirteen frame Langstroths have been tried by several beekeepers in British Columbia, and discarded.

So in 1918 I had ready a complete equipment for 20 more Dadant style hives with eleven Jumbo frames, spaced as were the previous five, one and a half inches, I did not like the Dadant cap, but I followed the idea by using the "riser" so favored by British Beekeepers to protect the super. My cover is a telescope with a two inch rim. In general appearance my hives just look like a Dadant. The season proved to be cold and dry so that from the middle of May until well on in July the bees lived from hand to mouth. When the season closed I had only eighteen Dadants in all, many of them without the full complement of combs and short of stores. To remedy the latter trouble I gave them shallow supers of honey, and the net result was that only two colonies were wintered in the brood chamber alone. It was not a fair deal for the new hive, but it was the best I could do.

The winter was mild but wet, typical Pacific Coast weather north of San Francisco. Bees wintered well where stores were plentiful. I left 50 pounds to the hive, but a rollicking party of young porkers got access to the orchard where my apiary is located, found the most succulent morsels right in front of the hives and jarred these considerably, so in the spring I found stores lower than usual. April was cold and wet, and I was therefore unable to make my usual spring inventory of brood area and weight of honey, so my notebook has merely such words as, strong, medium, weak, plenty, short, no stores, just such facts as one could gain from a hurried examination above the frames.

Having completed the annual spring tabular statement as to queens from different breeders, also according to their age, hives and systems of packing, so as to find the value of the whole series of experiments on wintering, I have been conducting for years to find the best system for a region where damp is the most important factor, I worked out quite a series of percentages, and feel I can

begin to comply with Mr. Dadant's request for the results of the venture.

First, I group all the colonies in Dadant hives under the three headings of strong, medium and weak, and do the same for the other style of hive, the shallow divisible, and I find that 72 per cent in the Dadant hives are strong, while in the others only 55 per cent. On the face of it, this looks first rate, but I have four different lines of queens in my yard, and a little more than half of last year's raising. So I have to work out a few more percentages. For example, one strain of queens, which I will call A, has 66 per cent strong in the whole yard, but in the Dadant hive there are 75 per cent of them under the same heading. Strain B, for which I paid a pretty good price on account of much booming, has 33 per cent strong in the whole yard, and in Dadant hives. Funny queens these, slow in building up, not inclined to swarm, giving a crop equal to the average of the yard. Stock C is 66 per cent strong over the yard, but 80 per cent in Dadant hives, while strain D is 70 per cent strong in the apiary and 80 per cent in Dadant hives. Queens of all four strains raised in 1918 are 58 per cent strong over the yard, but 83 per cent strong in Dadant hives. Older queens are 70 per cent strong in the yard, and 80 per cent strong in Dadant hives. I take the strains individually as found in Dadant and the other style of hives, and find the average at least 25 per cent in favor of the Dadants. The two colonies housed in typical Dadant style, that is in a brood-chamber alone with a sack of dry moss in a protecting case above, have in the last week of April five solid combs of brood, just as fine as I ever saw.

The above was written in May, when I intended to convert 30 more of my colonies into this style of hive, hoping to find the task much easier, seeing I had so many drawn combs, and would be able to help out with frames of sealed brood occasionally. Now in November, I have to report that in the region where my apiary is located the season has been cold and dry, as in 1918. My colonies, as a whole, were very strong by the end of May, but from that date until the honeyflow started in the middle of July, they practically lived from hand to mouth. The best I could do was to work over 19 more of my colonies into 11-frame Jumbo hives. My honey crop averaged 40 pounds to the hive, spring count. On the first extracting when the supers were stacked up in the honey house, I was rather surprised to find that fifteen of them came from the original eighteen original Jumbo colonies, and five from the nineteen shallow-frame hives. I have thought much as to the mechanical why, but have failed to get an answer satisfying to myself. The most probable to my mind is the protection given the super by the outside telescope case.

I am now more than satisfied with the great ease in working this style of hive, and I think I have run the gamut through Gallups, 8-frame Langstroth, 10-frame Langstroth, Long idea with 17 frames (by the way it is rather good), Simmons' bureau hive and 8-frame shallows. Many theorists denounce the shallow hive, but I have always liked it in preference to 10-frame Langstroths. As a rule it lagged in early spring behind a hive with Langstroth frames, but whenever it had six frames of brood I transposed the bottom half with the upper, then there was something doing.

For extracting I use the shallow frame, prefer it much to the ordinary Langstroth, all this after using it for eleven years. When I started to learn golf I chose a heavy club so that the weight of the head would drive the ball; later I learned that a light club over which I had perfect control always gave longer distances and better line. In the field of carpentry my first hammer weighed a pound and a half; now for ordinary bench work my choice is a 14 or 16 ounce hammer. In beekeeping I am applying the same principle. In examining a brood-chamber in my own apiary my heaviest lift is now 8 or 10 pounds, that is a full Jumbo frame; when extracting I handle about 5 pounds, and the width of the frame is such that the uncapping knife slices off the cappings very easily. I find I can uncap about 50 frames an hour without rushing, and I am no speed artist. With eight shallow frames in four 12-inch baskets I extract the equivalent of five ordinary frames, so I gain a little there. In my own apiary from now on my only heavy lifts will be the supers of honey in July and August, so I have gained a lot.

When I bought my 6½x8½ camera over thirty years ago, Dr. Thompson, then aged 65, said, "When I was your age nothing less than a 12x15 was good enough for me. It was in the wet plate days, so I had to take with me large bottles of chemicals and baths, and you can picture to yourself how I looked trundling a well-laden wheelbarrow all over the country-side seeking for new scenes to photograph. Now I am content with a camera for 3¼x4¼ plates."

My sympathy is now with Dr. Thompson. Then I could not appreciate his point of view, now I understand. Just ask any man who owns a camera weighing over 2 pounds how often he **carries** it a few miles from home and you will find it is very seldom. He is the victim of his tools.

B. C.

Well-Known Beeman Dies

On December 29, 1919, occurred the death of Ernest J. Beeker, of Rushville, N. Y. Mr. Beeker was one of the oldest and most successful beekeepers hereabouts. We were always glad to have him with us at our meetings. He was a well posted man in apiculture when I was learning my ABC's about 45 years ago. I well remember the hive I saw in his yard at that time—brood-chamber in the center and 4-lb. glazed boxes piled all around this. The principle of the hive was: the boxes were started **over** the brood-chamber, and while partly filled were moved to the side, where empty ones again were placed on top. Mr. B's success with this plan was a wonder to me at that time. However, he adopted the 1-lb. section cases soon after and with them the Langstroth hive. Mr. Beeker was highly esteemed by the beekeeping fraternity here and we shall all miss him.

F. GREINER,

Naples, N. Y.

Wax as Varnish

THE bees appear to be quite deft in handling their kind of varnish. We all know how determined they are to stick everything fast, messing around with propolis, world without end, causing beekeepers to become prematurely grey, not to say profane. One often thinks that they might make better use of their time. But who knows? Perhaps it was here that men got the germ of the idea for varnish, which was later to blossom forth as that divine confection used by the old violin makers of Cremona to embellish and preserve their instruments.

In modern formulae for varnish, wax does not appear to be mentioned. Recipes are found, though, for wax polishes and wax stains. Here is one for wax polish:

Melt 8 ounces of beeswax with 8 ounces of spirits of turpentine; allow



A Massachusetts house-apiary

to cool, and then add 2 ounces of alcohol.

A polish for floors is made as follows:

Melt together 16 ounces of beeswax, 1 ounce Venetian turpentine and 16 ounces spirits of turpentine; allow to cool and apply. After one-half hour, polish with woolen cloth or weighted floor brush.

A polish for tool handles can be made by melting together equal parts of linseed oil, spirits turpentine and beeswax. Apply this mixture hot with a rag. The friction of the hand in using the tool gives the handle a smooth polish that is a great comfort to the user.

Wax stains are made from a mixture of beeswax and turpentine, colored with oil colors such as vandyke brown, burnt and raw sienna, burnt and raw umber, etc. The principal requirement is that the color be semi-transparent in order not to hide too much the grain of the wood.

Wax is thought by some to have been an ingredient of the so-called lost Cremona varnish mentioned above, which was developed by the violin makers of Italy, about the year 1550, and used by them until 1750, when it mysteriously disappeared. Its loss has been much lamented by the musical world, for they are convinced that with it was lost the Italian tone of the violin which is so much sought for by virtuosi of that instrument.

Occasionally a ray of light breaks the gloom of the fiddle fans. One Victor Grivel announced several years ago, the title of his book as: "Vernis des anciens luthiers d' Italie, perdu depuis le milieu du XVIII siecle, retrouve par V. Grivel." (Varnish of the old violin makers of Italy, lost since the middle of the 18th century, rediscovered by V. Grivel). The only comment that can now be made is that the world was unconvinced. The author has been gathered to his fathers, leaving no record of his varnish formula behind him.

This is only one instance of a number of similar disappointments. The gloom of the would-be Cremona varnisher has now become Stygian. The outstanding fact is that "like the snow upon the desert's dusty face." Cremona varnish has gone where the woodbine twineth.

Some day her sad tale will be taken up by a skillful movie scenario artist and be played to crowded and humid houses from one end of this broad land to the other. In the meantime if any reader of the Journal has her concealed about his premises, he should stand and deliver, that the world may read without regret.

"The instrument upon which he played
Was in Cremona's workshop made,
By a great master of the past,
Ere yet was lost the art divine.
Fashioned of maple and of pine,
That in Tyrolean forests vast
Had rocked and wrestled with the blast;
Exquisite was it in design,
Perfect in each minutest part,
A marvel of the lutist's art;
And in the hollow chamber thus
The maker from whose hands it came
Had written his unrivalled name—
'Antonio Stradivarius.'"

—Longfellow.
"Tales of a Wayside Inn."

Maryland.

How to Convert L. Frames Occupied by the Bees Into Deep Frames

By Brother Alphonse Veith

IT makes an unsatisfactory job to transfer combs from a small frame to a larger one. Neither am I in favor of melting nice brood-combs, as suggested in the December number of the American Bee Journal in "Criticisms." In these days of high prices we cannot afford to destroy valuable brood-combs and compel the bees to build new ones with much labor and the consumption of about 10 to 15 pounds of honey for each pound of wax they produce. Add to this the price of new frames and foundation comb, which is together, per 100, in the neighborhood of $30.

The writer has made a start with the Jumbo hive, and in doing so the frames with combs occupied by the bees are used. The standard Langstroth frames are changed into deep frames simply by putting on a new bottom-bar with short end-bars which are fastened with crating staples to the Langstroth frame. Afterwards the bottom-bar of the Langstroth frame is cut with the aid of a narrow saw and removed. The empty space is now filled either with drawn-out comb or foundation. I have shown a specimen of this to an expert beekeeper, and he expressed his approval.

Indiana.

Two Queens in One Colony—Foulbrood, Etc.

By H. Brenner

WE find mentioned in bee books that in exceptional cases two queens worked peacefully on one frame, and that these queens are mother and daughter. In the apiary of Leonard Moss, Jr., in Seguin, Guadalupe County, Texas, in demonstrating to some beekeepers my latest method of queen rearing, we found two queens and supersedure cells in a colony, and as I investigated this matter in the tropics, I want to send in the results of my investigation, as it may interest the readers. In uniting hundreds of colonies for the winter flow last year in San Domingo, I saw in January two colonies with two queens each, and not related, the more so as one colony had a black and an Italian queen. One of these colonies had two supersedure cells. I examined the queens in these two colonies and found three of the queens crippled. In the Moss apiary here one of the queens had a torn wing and the other a crippled leg. In all these three colonies I found eggs and brood, but the colonies not up to date like the others. After the above investigation I came to the conclusion that the queens will generally try to kill each other, and whenever we find two queens in one brood nest they did fight but could not inflict the death wound. Both of these queens are in consequence of this fight either crippled or worn out and not fit for work, as the supersedure cells or inferior condition of the colonies shows.

In uniting colonies in the tropics I marked for experiment about two dozen queens and I always found the old queen missing and the young one remaining.

A friend of mine asked me to look at his apiary in southwest Texas, which did not bring in honey as they ought to have done. I found that the colonies had too many supers with foundation for the light honey flow and condition of the colonies. I took the supers off and left only one per colony. I found in one apiary two colonies badly infected with foulbrood, but fairly strong in bees and apparently a good queen reigning. These two colonies I left with only one super like the others. Other colonies that the apiary hands had marked "foulbrood" I did not bother, for fear of robbing. In about 12 days, when I revisited the apiary to put the second super on, I found in these two colonies not a sign of foulbrood, the brood nest in excellent condition and nearly ready for another super.

I have been asked several times here in southwest Texas by good apiarists if honey extracted from foulbrood colonies contained foulbrood germs or bacteria. I always took it for granted that it did, and for want of opportunity have never experimented with it. I suggest to isolate about six sound colonies in good condition, take all stores away and feed in starvation time honey taken from foulbrood colonies and watch the results.

Texas.

Soldering

Will you allow me to add a word or two to Doctor Bonney's article on the above in the American Bee Journal for August? If after the raw muriatic acid is killed with zinc a tablespoonful is added to half a pint of water it will be found a very excellent cleaning solution for the iron. It is quicker and better to dip it into this than wipe it with a cloth. I have never tried plugging small leaks with wax and fat, but will do so. When the tin is full of honey these leaks are very difficult to solder, as the honey oozes out and prevents the solder from taking. The best method is to tip the tin in such a way that the honey will fall away from the hole.

In mending small holes in enamelware it is best to work around the hole with the small blade of a pocket-knife until the edges are bright. Break the enamel away and get down to the iron. Plug the hole with a bright, flat-head nail which will just fit the hole, having the head inside. Solder from the outside with a good hot iron and thoroughly "sweat" the solder onto the nail head inside the

vessel. This is much better than just filling the hole with solder. Cut off the protruding part of the nail and job is done. For larger holes the same method can be employed, only use a copper rivet with the head inside and washer out. If the solder is well "sweated" with this it will last as long as the pot. Cut off the protruding part of the rivet.

MAJOR SHALLARD.

New South Wales.

DR. MILLER'S ANSWERS

Answered by the Editor during the illness of Dr. Miller.

Honeydew

I have been awaiting to see or learn something out of the Journal in regard to honeydew. My bees have been dying off gradually all winter; my neighbor beekeeper has lost half of his colonies up to date.. I am informed if bees carry the honeydew into their brood-nest and live on it, it kills them. If any of our beekeepers know of any remedy to overcome this I would like to hear from them.

SUBSCRIBER.

ANSWER.—I know of no remedy but the removal of the honeydew and replacing of it with good honey or sugar syrup. If it is not too late, you might feed the colonies with good sugar syrup made by diluting 2 pounds of sugar with a pound of water and feeding it to them warm, in a feeder, right over the combs. They will use that first and will leave the honeydew in the combs. Most of the bee books advise the removal of honeydew in the fall.

Moving Bees—Transferring

1. As I have a hive of bees that is about 80 rods from the house, which I would like to have brought closer, I would like to know how and when is the best time to move them, and how to do with them after moving, so as to not lose any bees.

2. I would also like to know when is the best time to transfer from a box hive to a movable-frame hive, and which do you think is the best method of doing it ILLINOIS.

ANSWERS.—1. Wait till the warm days of spring. Then close the hive in the evening. In the morning drum them vigorously so as to frighten them. Then carry them to the new spot and place a slanting board over the entrance so as to compel them to take notice of the change of location. Usually when they have been very much disturbed they take note of their place, as does a new swarm. But some bees among the oldest often insist on returning to the old spot.

2. The modern way to transfer is to wait till the beginning of the honey crop, drive the bees and queen into a box and hive them into the new hive just like a swarm, placing the old hive on top of their new home or at the rear, for 21 days, or until all the brood hatches. The more thorough way is to transfer all the brood combs also and destroy the old hive. For the latter method, see the text books: "First Lessons in Beekeeping," or "Langstroth." It would take more space than can be spared in the Journal.

Fermented Honey in Cells

I noticed last August, when extracting honey, that the sealed honey from at least one colony was fermenting. December 22 I extracted the honey taken from a number of hives after the flow stopped and I found practically every cell in the super from hive No. 43 was fermented and would throw out say 6 to 12 small air bubbles from each cell as soon as uncapped. The cappings slipped from the knife as if they were greased and the honey was very thin, though it was sealed. It is in an open jar and has become decidedly sour. I put a bucket of it in a hot water bath; the water boiled a few minutes, then all was set on the back of the stove. When cold this honey had little or no foam at top, but looks and tastes like it had a big lot of pollen in it.

1. Will this colony winter well?

2. Will its honey ferment again next season? I know that one colony had this trouble last year (1918), too, perhaps this one.

3. Do you want some of this honey and some of the comb it was in for examination?

4. Should I transfer them into a clean hive next summer, or requeen? or both?

I got a poor quality of honeydew in June and a good crop from heartsease later, over 8,000 pounds in all. MISSOURI.

ANSWERS.—1. It is difficult to guess, but my guess would be that the colony would suffer very much, if its honey is all fermented as described.

2. If the conditions are as mentioned on page 422 of December last, the honey of next season would probably ferment again if stored in those cells. . It seems as if the germs of fermentation remain. At least that was the experience of Mr. Kenyon in similar circumstances.

3. We will be glad to examine a sample of it.

4. If the trouble is bad, it might be well to put the colony on new combs next year. Requeening seems absolutely unnecessary, and, in fact, useless. The queen is not at fault.

Division—Rearing Queens—Killing Drones

1. Can I split my colonies in half, putting 4 frames full of foundation, at the beginning of the season, in another hive, and have good swarms?

2. Is it necessary to buy queens, or will they rear their own queens?

3. I had lots of drones in my hives, but I put on drone traps and killed them all. Will the bees eventually rear a young queen, when the old one is worthless? MISSOURI.

ANSWERS.—1. Yes, you can split your colonies in the way you suggest, but you must watch them so as to make sure that each side has all it needs. If you don't seek and find the queen, you must be sure and have young larvæ less than 3 days old in each division, so they can raise a queen.

2. They will rear a queen, if you do as above suggested. But if you buy queens to use when you divide, it will be better. You must make sure in what half the queen is.

3. Your way of killing drones is the most expensive way. Yes, the bees will usually rear a new queen when the old one is too old. You need to get a bee book of some kind and read it. It will explain many things to you that can't be answered in this department.

Miscellaneous Questions

1. Next year I want to use a shallow extracting super and comb-honey super on the same hive. The sections will contain full sheets and the extracting super will contain only narrow strips for chunk honey. Now which super shall I place on the top if I put them both on at the same time?

2. You dequeen for ten days and have the same honey and it cures the colony of European foulbrood, and yet if you would feed any of that honey to a healthy colony they would catch the disease. Please explain why one colony can eat it and the other can't.

3. If one should buy a pound of bees with queen and afterwards change places of the hives between it and a strong colony, will the returning field bees kill the queen, or will they take hold and help build up the colony?

4. Criticise the following for transferring from a box hive to a movable frame hive. Just wait until they swarm. The box has no bottom. Turn it bottom side up and put a queen excluder over it. Hive the swarm and place it (minus bottom) on top of excluder, stopping up all entrances except through the hive(of course this will have an opening). At the end of nine days the brood below will require no more attention, so remove the excluder and put on an escape board, bottom upwards, so the bees can get up but not down. If the virgin attempts to swarm she can be caught in an Alley trap. Would there be any honey remaining in the box when the brood all emerged?

5. If a swarm emerges from a hive, which we will call A, and a couple of days later a swarm comes from another part of the yard and is hived in A, will the new swarm tear down the cells already started in A?

6. How can a person put an observation hive in a window and not mutilate the window?

7. If one puts a tight division board in the middle of an 8-frame hive and has on each side a full 4-frame nucleus, will the bees work as well in the super as eight frames under one queen?

8. Would one need to use any precaution in uniting them except to remove the division board?

9. Will bees in a 10-frame Jumbo hive lay up as much comb honey as in a 10-frame Langstroth size? PENNSYLVANIA.

ANSWERS.—1. Put the extracting super on first. As soon as the bees get to work well in it, raise it up and put the comb honey super under it. If you insist on putting them both on at the same time, put the comb honey super at the bottom.

2. Are you not getting the two kinds of foulbrood mixed? It is with American foulbrood that the honey is dangerous. If there were germs of European foulbrood in the honey, then, of course, we would have to starve the bees also. But it does not seem to appear necessary.

3. They will not give any trouble if the crop is on. If there was no honey in the field they might cause trouble, but not positively.

4. The success of this will depend in a measure upon the season. It might do in a warm summer. As to whether there will be any honey left in the lower box, depends upon how much there was when it was turned over, and also how large a crop has been harvested in the meantime. It would be a puzzle to answer it one way or the other.

5. It may and it may not. In a crowding season the cells would probably be preserved.

6. Raise the window enough for a bee passage and put a block of wood in the aperture, on each side of the bee passage. An opening an inch wide is sufficient for an observation hive.

7. Probably they will. Have never tried it; try it yourself.

8. Not if there is a honey crop. At other times they should be thoroughly smoked before removing the board, and it would be better to kill one of the queens the day before.

9. That depends on the strength of the colony. But with colonies of equal strength, as there is more room for honey in the Jumbo, they may put more honey in the supers of the Langstroth. I judge that is what you want to know, though you don't exactly say it.

Transferring—Cross Bees—Large Hives

1. I have 12 hives, 11 of which are in standard dovetailed hives, and the other in a box-hive. I would like to know your best way to transfer the bees of the box hive into a standard 10-frame dovetailed hive. How could I transfer the hive? I do not wish to save the old combs and place them in the new frames, as some do when they transfer. I

am to furnish this new hive with full sheets of foundation.

2. I would like to know what causes my bees to get angry each time I open a hive and apply a little smoke. Do all bees do this?

3. Are 8-frame hives as good as 10-frame hives when running for comb honey? Do they winter as well as the 10-frame?

4. Are the 10-frame Jumbo hives better for wintering than the 10-frame dovetailed? Are the Jumbo better than the 10-frame standard hive when running for extracted honey?

5. Can you give any information as to where I can get any 12-frame dovetailed or other hives?

6. I would like to know which way is best to arrange the hives. Arrange them all on separate stands, or all on one stand?

ILLINOIS.

ANSWERS.—1. The best time to transfer bees is when they are making some honey. You must, of course, save the brood, whether you save any of the old combs or not. At a time when they are beginning to make honey, say about June 1, smoke your box hive, then invert it, placing another hive or box of about the same size on top of it, mouth to mouth. Put the movable frame hive on the old stand. Drive the bees out of your old hive by drumming it with a club for a few minutes. Make sure the queen goes with the bees. She usually does when the bulk of the bees go. Then throw your driven bees in front of the movable frame hive, just as if they were a natural swarm. After that you can either fix the old hive on top of the movable frame hive, with an excluder between, or you may place the old hive by the side of the swarm, but it must have some bees left to take care of the brood. At the end of 3 weeks, the brood will all be hatched out and you can drive out the rest of the bees and unite them with the bees in the new hive. It is a good plan, 10 days after making the first drive, to examine the box hive and destroy the queen-cells. Lengthy directions for transferring bees are given in the revised Langstroth book, the "Hive and Honey Bee."

2. Probably you start to open the hive before smoking them. The first thing to do, before you open a hive, is to give a few puffs of smoke at the entrance, for the door guards are apt to become angry otherwise. Some bees require more smoke than others. If they are smoked enough to compel the bees to fill themselves with honey, they become very peaceable.

3. It depends upon the manner of management in both cases. Dr. Mil , in his most successful management of 8-frame hives used 2 stories for breeding.

4. Yes, by all means, as they have more honey above the cluster proportionately. They are also better for extracted honey, because they give more room for breeding.

5. They may be made to ord , but are not listed in the ordinary catalogs

6. Separate stands are best. When you have several colonies on one stand and you handle one of them, it is apt to jar the others slightly and anger the bees. If you have them on a solid stone or concrete foundation there is no jar and it makes no difference.

Frost in Hives—Sugar Candy—Clipping Queen's Wings

1. I have my bees in a stone house and every warm day the water runs out of the hives and freezes in an icicle on the bottom of the hives. The inside of the hives seems to be covered with frost. What causes this? I had my bees in the same place last year and they did fine. There is a sorghum mill on the farm and I noticed the bees were quite busy around there last fall. Do you think this has anything to do with the water running from the hives?

2. I melted sugar and made a hard candy and turned over the frames next to the bees for them to eat. Was this advisable?

3. I see a question was asked, "Is it advisable to clip the queen's wings when producing section honey?" You answered, "Yes, certainly." What is the idea in doing this?

ILLINOIS.

ANSWERS.—1. Your hives are evidently more moist than last year. That is, the food must be more watery. The sorghum mill might explain it. It is possible, also, that your stone building is colder than it was last year. To remedy this, at least in part, place absorbents, such as woolen rags or dry leaves, over the cluster, after having removed any impermeable covering that may be placed over them. The moisture arising from the breath and perspiration of the bees will then be absorbed by the moisture absorbents.

2. Yes, that ought to remely the trouble to a certain extent, as sugar candy incites less perspiration than liquid food. Di you ever notice that when you drink much water you perspire more and pass more urine? Did you ever notice that when the weather is cold and you do not perspire you are compelled to pass more urine? The more watery food the bees consume, the more moisture they produce.

3. The only benefit in clipping the queen's wings is the prevention of he escape with a swarm. It is usually worth while.

Mice—Shaking for Foulbrood—Cellar Wintering

1.I have 9 colonies of bees. 4 I left outside and 5 I took in the cellar; 2 of those in the cellar are in one hive, per your plan. I have trapped 6 mice this winter on the front porches of the hives. One mouse refuses to come out. I can see him by holding the lamp just right.

2. Six of my 9 have American foulbrood. Would you shake in fruit bloom or clover bloom?

3. I moved my 5 on Novemoer 1. Was that too early this year?

4. If I face t' em to the north will they not put in a longer day's work?

ILLINOIS.

ANSWERS.—1. You might give poison to that mouse.

2. Wait till clover.

3. I think they could have flown later, and they would have been better for that later flight.

4. No, unless there is something unusual about the exposure.

Cupule

I am very much interested in your plan for raising queens, as given on page 308 in the September number. But I don't know what you mean by cupule. Also I would like you to tell me where cupules can be had, and the cost. Also where the punch you speak of at the same time can be had. I will send for them both. WASHINGTON.

ANSWER.—The cupule is a cell cup similar to those used in the Doolittle system. You will find the Barbeau method described at length, with cuts, in the July, 1919, number of the American Bee Journal. That which is contained in the September number is additional information on the same subject. The one completes the other.

The dictionary explanation of the word "cupule" is: "A concave or cup-shaped depression, as in a level surface." The word is therefore correct.

Mr. E. Barbeau, of St. Eustache, Quebec, is the only man selling the implements of the Barbeau system. Write him.

As to the price of cell-cups, they are 75 cents per hundred, and may be had of almost any dealer in supplies. A queen-rearing outfit of the Doolittle system is worth about $6. This outfit is generally used only by queen breeders.

Increase

I am a novice at the bee business. I have had bees for three years. Last year I made my increase by taking combs of brood and a queen to make my new colonies. I use 10-frame hives. I have sixteen colonies. Next spring I would like to increase to about twenty-five colonies and get honey, too. What method of increase would you recommend? I want to make my increase the last of May, as the clover flow begins the 15th of June.

INDIANA.

ANSWER.—It is out of the question to give you a detail of the best plan to make increase in this department. Here is a simple method:

Divide each colony that you wish to use for increase into two parts, before swarming time. Put half of the brood and more than half of the young bees into a new hive on a new stand. Give these a new queen, leaving the old queen on the old stand. Fill the empty space in both hives with frames of comb, or, if you have no comb, with comb foundation in full sheets.

There are many other ways. A half dozen different ways, adapted to different conditions are to be found in the book "A Thousand Answers to Beekeeping Questions."

Bees Dying

1. I have, or 'd have, four stands of bees in 8-frame hives, with plenty of honey for winter. I put them in their winter quarters December 1, in boxes, one hive in a place, on the south side of the house, with the south side of the box open. I have just one swarm and another is about all dead. I have the Italian bees and I noticed the swarm that died turned black before they died. Did they have a disease, or what was the matter?

2. There was 20 pounds of honey left in the hive. Would it be all right to leave it in the frames and use it for bees next swarming time? NEBRASKA.

ANSWERS.—1. Your colonies must have been weak, for they ought to winter well in outer boxes with the south side open. Perhaps you transported them to the south side of the house from another spot, in December. In that case they would lose many of their field workers who would go back to where they stood before and get lost. Their turning black is no evidence of disease. It is because they lose their hair. This is often the case with bees that die in winter.

2. Unless there is foulbrood in the combs, the honey is all right to use for other colonies.

Feeding in Spring—Dysentery

1. I winter bees out of doors, by packing in case similar to Mr. Barber's, page 21, and owing to winter beginning about two months earlier than usual, it will be necessary to spring feed some weak colonies, which I have all in one case. I have some extracted honey taken from my own bees last fall. This has an unpleasant flavor and was not put upon the market. It is candied, or granulated. Will this be good to feed? Should it be heated, and can it be fed from a stand in the yard, allowing the weak colonies only to have access to it on warm days of early spring?

2. Would it be well to allow access to rye flour during early spring, also plenty of water?

3. Can any harm come from feeding the above, even when fruit bloom is on?

4. When is a colony most likely to have dysentery, and is there a common remedy—or what is best to do? NEBRASKA.

ANSWERS.—1. It is all right to feed. But it is much better to put it inside of the hive, right over the cluster, especially if it is granulated. When the granulation is very coarse there is sometimes a little honey lost, but that is rare.

2. Yes. To attract them to rye flour, in a box outside, put some old combs over it. Pack the flour tightly in the box, in a little lump. Have water with floats, in some handy, sheltered spot. Some scientists say that flour is

useless, but we have fed hundreds of pounds and never saw them throw it away.

3. It is better to feed before fruit bloom or after.

4. Dysentery comes only from too long confinement, often with too watery food, sometimes because the honey contains many pollen grains. So we see it only at their first spring flights. As to a remedy, that is still an interrogation point.

Bees Dying in Cold Weather

I have noticed for about a week quite a number of dead bees just outside of the entrance to one of my hives. Sometimes a good handful, and quite a few scattered out on the snow. The bees seem to come out when it is too cold to expect them to be out. The other hives do not show any bees out.

1. What would you think would make them do that?
2. Could they be lacking food? They had plenty when they went into winter quarters.
3. If it could be this, would you advise feeding them at this time, and how?
4. Would it be advisable to take off the winter packing and examine them now? During what time of the day would it be best to do this? ILLINOIS.

ANSWERS.—1. Sometimes a very strong colony will try to throw out its dead bees when the weather is hardly warm enough and some of the bees die on the snow. This may be the case. Again some bees may be suffering from full bowels, from too long confinement, and die on the snow. They would have to die anyhow, if they could not fly. If the dead bees appear to have been carried out it is rather a favorable sign. If there are signs of discharges of a darkish color about the entrance, it is an unfavorable sign.

2. No, it is not likely that they are lacking food. Starving bees stay in the cluster and die there.

3. It would not be advisable to try to feed them in winter.

4. Do not disturb them in the least till some warm day when you know they are able to fly. Then examine them. If they need food, give them a flat cake of candy, such as is recommended by all bee books. Put it right over the cluster and close over with some warm material.

Increase—Rearing Queens—Queen Introduction

1. I have four swarms of bees and I want to increase them to eight or ten. How can I do this and also expect a crop of honey?
2. I thought I would set an empty story on top of the swarms and as soon as they work in this story I will move the lower story away. If this is right, how far should I move the lower story away?
3. If I remove a queen from a swarm in order to get cells which I want to put in with the new swarm, where can I keep the queen during the time they are making queen cells?
4. How should I introduce the queen again after I have enough cells made?
5. I averaged about 54 pounds of honey per colony. Is that a good flow? MISSOURI.

ANSWERS.—1. I know of no way that will insure a doubling of the number of colonies and a crop of honey, unless the season is very good. If I could tell in a few lines how to do this, there would be no need of books on beekeeping. You should read some work on this subject.

2. The upper story should have brood in it before you move either away. Else the story without brood would dwindle away unless it be given a queen.

3. Make a division with that queen and do not think of giving her back to the colony which is rearing queen cells. Remember that you should leave plenty of young bees in the colony that is rearing queen cells.

4. There will be no trouble in introducing the queen if you place her with some of her own bees in a division.

5. That is a very fair flow, if you did not get any swarms. If you got both swarms and this flow, you had a very good season.

Increase—Carbon Bisulphide

1. I have eight hives of bees. I would like to increase to double that amount in the spring by dividing or manipulating them some way to make increase and have them raise their own queen. I have Hoffman frames of full sheets of foundation to put them on. Please tell me how to make the increase, and to get the foundation drawn out, and to get the best honey crop.
2. Will honey or combs which have been treated with carbon bisulphide affect the bees, or any person who eats it? How much bisulphide do you use for five hive bodies full of honey? PENNSYLVANIA.

ANSWERS.—1. A little before swarming time take half of the brood combs, with all the bees on them, from a colony, and put them in a new hive, being sure to leave the queen in the old hive, and larvæ less than three days old in the new hive. Fill the empty spaces on the side with frames of foundation. Then put this new hive in the place of another colony, placing the latter on a new stand. This will give you one division from two hives. You may divide half of your colonies in this way, and divide them again a few weeks later, when the young queens are laying. It is still better to rear queens beforehand by dividing only one colony at first to rear queen cells. But to answer your whole question fully would require a whole book. Better buy one of the text book, and if there are any points in them that you wish explained, this is the place for it.

2. Carbon bi-sulphide is extremely volatile and will evaporate readily. It is therefore harmless to the bees or the honey. The quantity recommended by Dr. Paddock in his Bulletin of "Beemoth" is a little over 2 ounces for 10 cubic feet of space, or seven hives. We use about a tablespoonful on a cloth for each hive. Remember that it is inflammable, explosive, and easily evaporated. It is very heavy, and should be put at the top and the hive hermetically closed, promptly.

A Beginner

1. How do you keep bees from gluing the brood frames to the hives and to each other?
2. My bees all died, and I would like to get a start by catching passing swarms. There is a big cottonwood tree close to where I work and the bees from everywhere come there to gather the pollen from the buds in the early spring. If I should fasten a hive filled with combs in the brood frames while the bees were around in the spring would they notice it and when they swarm would they be apt to come to this tree and take up their abode in this hive? Nearest stands are about a quarter of a mile away.
3. As drones are always raised in drone combs, how can the queen tell whether she will lay a drone egg or a worker egg in these cells?
4. How are hives opened without jarring the bees, as they always glue the top down, and it takes prying to get it loose? ILLINOIS.

ANSWERS.—1. If the frames are made properly, they will be glued only at the shoulder hanging on to the rabbet of the hive at both ends. To loosen them, use what is called a "hive tool." A common wood chisel will do. We used nothing else for years. If your frames are of the Hoffman make they will be glued to one another along the upper third of the ends. That makes them a little more difficult to loosen. We prefer the free hanging frames, though the others are perhaps better for beginners.

2. You may be able to catch swarms by placing a hive in some open place, as high as convenient. But it is not necessary to have it out early, as the bees who hunt for pollen in early spring are not looking for a home. The scouts that hunt for a home usually do so about the time the swarm issues.

3. How does the queen know whether she is laying a drone or a worker egg? That is a puzzle to any one of us. But that she does lay drone eggs in drone cells and worker eggs in worker cells, as a rule, does not admit of a doubt.

4. If you use a honey-board over your brood chamber, it will always jar it to pry the board loose. We use either an oil cloth or a painted cloth over the frames, and it can be pulled off without jar. We remove it when we put on the sections.

Texas Honey Producers Increase Capital Stock

We have just received notice that the capital stock of the Texas Honey Producers' Association has been increased from $15,000 to $50,000. This was necessitated by the enormous volume of business done, which requires keeping in stock at all times a large line of bee supplies and honey.

This association has done wonders for the Texas beekeepers since its organization. The whole of their 1919 honey crop is already sold, and at good prices, and the manager has had to turn down orders. All of this honey was sold in the State of Texas under the "Lone Star" brand.

Under its efficient manager, Mr. LeStourgeon, such success and growth should continue. Undoubtedly, every Texas beekeeper should take advantage of this opportunity of becoming a member of this live association. Its offices are at San Antonio.

Washington Conventions

Two beekeepers' meetings were held in the State of Washington during the month of January. The State convention held at Seattle January 22-24 was well attended and the sessions were full of interest from start to finish. The assembly room in the Chamber of Commerce was well filled and sometimes crowded. A number of beekeepers from British Columbia were present. H. N. Paul was elected President, J. O. Wallace Vice President and George W. B. Saxton Secretary-Treasurer.

On January 26-27 the Inland Empire Association met at Spokane. Beekeepers from Eastern Washington and Idaho were present, with a number who had attended the meeting at Seattle. George W. York was elected President, Dr. C. E. Sheldon Vice President, and Mrs. J. E. Thompson Secretary.

There is a greatly increased interest in beekeeping in the State of Washington and the two organizations propose to keep things moving in the future. F. C. P.

Co-operation in the Air

Beekeeping is conducted on a much larger scale in the west than in the east, and the question of co-operative marketing is a live subject at nearly every western convention.



Maryland Convention

The January meeting of the Maryland State Beekeepers' Association was held in the Rennert Hotel, Baltimore, Md., on the night of the 27th.

Approximately 40 people were present from Baltimore and the adjacent towns. Mr. C. G. Cale, Extension Apiculturist of the United States Department of Agriculture, delivered the main address of the evening, in which he emphasized the importance of the beekeeper adapting his practice to the instincts and behavior of the bees.

Mr. S. G. Crocker, Jr., Vice President of the Association, delivered a brief talk on the co-operative buying of bee supplies, advising that, if possible, supplies be bought in double quantity every other year rather than annually, except for those items which must of necessity be bought each year. He reported that the carload of supplies bought this year has been shipped to the individuals with the exception of a very small amount.

E. N. Cory, Secretary-Treasurer, spoke briefly of routine matters and then opened the meeting for a round table discussion on individual problems. In answering the questions that were propounded, Messrs. Cale, Crocker, Cushman, Atkinson and Cory helped to supply the answers.

The meeting adjourned at 11 p. m. The next meeting will be held about the middle of February.

Nebraska Convention

The annual meeting of the Nebraska Honey Producers' Association was held January 19 and 20, and was very well attended. At this meeting the association pledged its support to the American Honey Producers' League. The officers for the next year are: President, R. W. Livers, of Hardy. Secretary-Treasurer, O. E. Timm, of Bennington, Neb.

National at Buffalo

The annual convention of the National Beekeepers' Association will meet at Buffalo, N. Y., on March 9, 10 and 11, at the Statler Hotel. This date is a week later than first announced.

Illinois Beekeepers, Notice

I expect to make a trip through the south part of the State this spring, so, friend beekeeper, let me hear from you, and I will gladly come your way and assist you in any way possible. Don't delay, but write me at once.

A. L. KILDOW,
State Inspector, Putnam, Ill.

A Successful Correspondence Course

For the past two years a correspondence course in beekeeping has been offered by the Iowa College of Agriculture at Ames. The course has been very popular. The fee is $3 to residents of the State and $4 to those a living in other States, and includes two books on beekeeping. So many students after finishing the beginner's course have asked for advanced work that an advanced course has recently been provided, with a fee of $3 for residents and $3.50 for non-residents of Iowa. The fee includes a textbook. Since several hundred students have already completed the first course offered, it is expected that the advanced course will prove equally popular.

An Experimental Project

A co-operative experimental project has been effected between the University of Tennessee, Knoxville and the Forest Ferguson Farms of Dyersburg, whereby experiments of benefit to Tennessee beekeepers will be carried out. O. H. Reichley, a graduate of the University of Ohio, has been placed in charge of the 100 colonies of bees in the experimental apiary. Mr. Reichley was named President of the Tennessee Beekeepers' Association in December. The Forest Ferguson Farms consist of 1,360 acres, where better Tennessee farming is being featured.

Honey Plants in Japan

By Yasuo Hiratsuka

JAPANESE honey plants ought to be different from American, I suppose. There are in spring months:

Ume **(prunus Mume, Sieb et Zuce).** This is a garden tree mostly; yields some honey and an abundance of pollen. The bees make their force from this flower.

Tsubaki **(Tea Japonica, Nois).** Wild and garden flower; much pollen; blooms in January to March, according to locality.

Apples are not so common.

Aburana (rape) **(Brassica chinensis, 2)** is a common cultivated plant for the use of its seed to make oil; blooms March-April.

Genge (Japanese clover) **(Astragalus sinicus L.)** is our principal honey source in Japan, at least in the middle or southern parts of this country. Honey of the genge is water-white, or very light colored, fine quality; blooms in May for about thirty or more days.

Then comes a dearth season for honey flow. It is rather rainy weather almost every year. So our summer months are a heavy handicap for Japanese beekeepers; hence most of them go to northern parts of the country for migratory beekeeping with their bees.

In autumn there are hagi (bush clover) **(Lespedeza bicolor, Turcy).** The honey is light amber. The same is found in some mountain land. In low lands it does not yield nectar at all.

Soba (buckwheat) **Fagopyrum esculentum, Moench),** is a cultivated plant. Honey is black or heavy amber, as you know.

Naginata-kauju **(Elscholtria patrini, Garcke)** is a wild plant in Hokkaido (our northernmost district) only, or at least mostly. The honey of it is heavy colored.

China (tea) **(Thea sinensis, L),** blooms from about the first of October till the latter part of December.

It is planted in all of the middle or southern part of the country for the use of young leaves to make tea. It is only in use for winter stores, because it is so late of season.

Bima **(Eriobotrya Japonica, Lindle)** blooms about November till December or later. Honey is light in color. In some warm localities we can take some surplus from this flower.

Of course there are many subflows of honey from many wild plants that I cannot mention in so short a report.

Japan.

Ligurian Queens Always Stayed in the Bottom Box

Some years ago, in describing my methods of manipulation in the American Bee Journal, I stated the above fact; but judging by the comments made on my article the beemen on your side did not catch on to what I meant; that is, not exactly. The matter was brought to my notice again by the article of Mr. Arthur C. Miller, page 309, American Bee Journal for September, under the heading of "One-story Jumbo, etc." In this he mentions that in a large proportion of the 2-story hives he had examined, the queens had gone up above and deserted the bottom box. One peculiarity of leather-colored Ligurian queens is that they will stick to the brood nest, and if they are compelled by lack of room to go above, they will return entirely to the former as soon as the pressure for room eases. In my opinion any breed of bees which deserts the brood nest under any conditions is not much good and should be gotten rid of.

MAJOR SHALLARD.
N. S. W., Australia.

(There is no doubt that leather-colored Italians, or, as Major Shallard calls them, Ligurian queens, place their brood in more compact form than the common bee or the hybrid. But our experience is that any queen which finds herself crowded for room to breed will leave the lower story. After all it is perhaps a question of latitude as to their returning below. —Editor.)

CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for three cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

BEES AND QUEENS

CARNIOLAN QUEENS—$2, tested.
John Strgar, Queen Raiser, Bitnje.
P. Bohinska Bistrica, State of Serbs, Croats, Slovenes, Carniola, Europe.

FOR SALE—200 three-frame nuclei, $5 each, with 3 frames capped brood and honey. Delivered May 1; one-half down, balance just before delivery.
Irish Bros., Doctortown, Ga.

ITALIAN QUEENS OF WINDMERE will be ready in May. Untested, $1.25 each; six for $7. Tested, $2 each; select tested, $2.50 each. Now booking orders.
Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—Choice Iowa bred 3-banded untested Italian queens, after June 15, $1.75; July, $1.50; August and September, $1.25 each. J. R. Coon, Ames, Iowa.

FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each; 6, $9; 12, $18. Tested, $2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly. W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease-resisting qualities. Untested, each, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
A. E. Crandall, Berlin, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

FOR SALE—100 hives of bees, 100 new hives, 10-frame, nailed, unpainted, wired for foundation; 1 4-frame Kretchmer extractor; other supplies. Cause for selling, death of owner.
Mrs. R. R. Marble, Holstein, Neb.

FOR SALE—2-pound packages bees with Italian queen. Price list mailed on request.
Allenville Apiaries, Allenville, Ala.

FOR SALE—From 10 to 150,000 pounds of sweet clover honey. It is guaranteed pure. In 60-pound cans, two cans to case. If interested, send for sample.
A. A. Tucker, Cowley, Wyoming.

FOR SALE—160 acres in the best natural bee pasturage in the west. Cheap.
W. F. Minchin, Sheridan, Oregon.

FOR SALE—75 colonies Italian bees, with all equipment. Supplies worth $1,600, not counting bees or honey in hives; $1,000 cash takes the outfit, or will lease to good man to run on shares. P. J. Thullen,
327 Walker St., Huntsville, Ala.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100. N. J. James,
1185 Bird Ave., San Jose, Calif.

MOTT'S Northern Bred Italian Queens— I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.
E. E. Mott, Glenwood, Mich.

FOR SALE—Package bees, dependable queens.
E. A. Harris, Albany, Ala.

FOR SALE—90 colonies of bees in Dadant hives; complete operating equipment and 88 empty Dadant hives.
Baxter Bros., Leavenworth, Kans.

FOR SALE—A. I. Root strain of resisting and honey-gathering, leather-colored Italian queens. Untested queens, $1.50 each, 25 or more $1.40. Tested, $2.50 each, 25 or more, $2.25. Select tested, $3. For larger amounts write. A. J. Pinard, Morgan Hill, Calif.

FOR SALE—2,000 pounds of bees in pound packages, early.
H. E. Graham, Gause, Texas.

FOR SALE—18 colonies of bees; also hives and supplies. Box 606 LaBelle, Mo.

FOR SALE—Italian queens from some of the best stock in the United States, mailed as soon as hatched. Safe arrival guaranteed to any part of the United States and Canada. All queens mailed in improved safety introducing cages. Order early. Send for circular. Prices, April to October 1, 75c; 10, $6; 50, $27.50. James. McKee, Riverside, Calif

ITALIAN BEES (the kind that fill from 2 to 6 supers), for sale, in new 8 and 10-frame Root hives, at $12 and $15 per colony, if ordered soon. Bees to be shipped by express in April. Queens after May 1.
Miss Lulu Goodwin, Mankato, Minn.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, $1.50 each, $15 per doz.; tested, $2.00 each, $22 per doz. One-frame nuclei, $3; two-frame, $5; three-frame $6.50, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed.
Geo. A. Hummer & Sons Prairie Point, Miss.

HARDY Italian queens No bees
W. G. Lauver, Middletown, Pa.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

FOR SALE—I will book orders for a limited amount for 3-banded Italian bees in 8-frame hives. All queens sent out in May are 1919 tested. Safe delivery guaranteed on journey within 48 hours. Begin shipping May 20
Full colony with tested breeding queen, $18.
Full colony with tested utility stock, $16.
3-frame nucleus tested breeding queen, $8.75.
3-frame nucleus tested utility stock, $6.75.
2-frame nucleus tested breeding queen, $7.50.
2-frame nucleus, tested utility stock, $5.50.
June and July Delivery:—
1-lb. package bees with untested queen, June, $4; July, $3.50.
2-lb. package bees with untested queen, June, $6.50; July, $5.50.
2-frame nucleus with untested queen, June, $6; July, $5.
3-frame nucleus with untested queen, June, $7.50; July, $6.50.
Tested breeding queens, $5 each. Tested queens, $3 each. Untested queens, $1.50 each, or 6 for $8.
Terms, 10 per cent with order, balance first of month shipped in; or 5 per cent discount for cash with order. Catalog ready about Feb. 15, free.
J. W. Bittenbender, Knoxville, Iowa.

FOR SALE—Leather colored Italian queens, tested, June 1, $1.50; untested, $1.25; $13 a dozen. Root's goods at Root's prices.
A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed. Tillery Bros.,
R. 5, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one,$1.50; six, $7.50; 12, $13.50; 50, $55; 100, $100.
Garden City Apiaries, San Jose, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, $1.25 each; $13.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

FOR SALE—Pure 3-band Italian queens, as good as you can buy with money. Write for prices. J. F. Diemer, Liberty, Mo.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault. Prop.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

HONEY AND BEESWAX

FOR SALE—A carload of white alfalfa honey. The one that gives me the best offer gets it. Send 10 cents for a sample.
Daniel Wurth, Wapato, Wash.

FOR SALE—We have a limited amount of our crop white clover, extracted basswood honey, all packed in new 60-lb. cans, 2 to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you. The Deroy Taylor Co.,
Newark, N. Y.

WANTED—Comb, extracted honey and beeswax. R. A. Burnett & Co.,
6A12t 178 S. Water St. Chicago. Ill.

FOR SALE—New crop clover extracted honey, two 60-pound cans to case, 35c per pound. Buckwheat and clover mixed, about half and half, 30c per pound.
H. G. Quirin, Bellevue, Ohio.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Rosa. Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

SUPPLIES

FOR SALE—8 and 10-frame hive bodies, covers and bottoms, Hoffman brood frames. I make them and can save you money. Odd size hives and frames made to order. Write for price list. F. D. Bowers, Sugar Grove, Pa.

FOR SALE—Used 5-gal. square cans, 2 in a case; good, bright cans; first-class cases, 50c per case f. o. b. my station.
Floyd Markham, Ypsilanti, Mich.

FOR SALE—60 10-frame 4x5x1¼ plain section supers, with sections, section holders and fences, about 30 painted; been used one season. No foulbrood. Best offer takes the lot.
F. D. Stephens,
Box 383 West Branch, Mich.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne. Ill.

FOR SALE—250 shallow extracting supers, 9 excluders; a bargain; write.
James McKee, Riverside, Calif.

FOR SALE—Thirty 10-frame hives with metal covers. Thos. Cordner, Sparta, Wis.

FOR SALE—4-frame No. 25 Cowan improved extractor, reversible, $25; also a Root capping melter, good as new, at $10, or both for $30. H. Greulick, Scotia, N. Y.

WANTED—Two or four-frame Cowan extractor, steam heated knife, cappings melter can.
Wm. C. Wilson, St. Charles, Mo.

FOR SALE—16 empty 8-frame hive bodies at 50c each. 75 comb honey supers and fixtures, 50c each; practically as good as new; changing to larger hives. Jas. I. Estes, Liberty, Mo.

FOR SALE—Used 5-gal. cans. Every one bright inside and washed outside. New corks; no leakers. Cases complete, case of 2, $1; 10 cases, $8. Carload if you wish. Will take honey, wax or cash.
Bruner, 3836 N. Kostner Ave, Chicago.

FOR SALE—Good second-hand 60-lb cans, two to the case; used only once, 60c per case, cash with order. E. B. Rosa, Monroe, Wis.

FOR SALE—1,000 Standard bee hives in flat 8 and 10-frame sizes; supers with sections; full depth and shallow extracting frames. Entire lot new and strictly first-class. We will sell in large or small quantities at low prices.
The Stover Apiaries, Helena, Ga.

I MANUFACTURE cypress bee hives, and sell Lewis' beeware. Write for booklet.
J. Tom White, Dublin, Ga.

SITUATIONS

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Situation by single man, interested in beekeeping, but lacks experience. Would be a willing assistant. Harry Freehauf,
814 Eighth St., Milwaukee, Wis.

WANTED—In April, one familiar with modern beekeeping practice to run small apiary (fifty colonies) and help out with gardening, poultry, lawn, etc Pleasant surroundings, on modern 1,100-acre farm.
L. W. Smith, Madison, N. J.

WANTED—Queen breeder for 1920 season. State experience and salary expected. Also need helper.
M. C. Berry & Co., Hayneville, Ala.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries.
The Rocky Mountain Bee Co.,
Box 1319, Billings, Mont.

WANTED—One experienced man and students, as helpers with our 1,000 colonies. Best opportunity to learn the business from A to Z, in the actual production of carloads of honey; theory also. Write immediately, giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter.
E. F. Atwater, Meridian, Idaho.
Former Special Field Agent in Beekeeping, U. S. Dept. Agr., for California, Arizona and New Mexico.

WANTED—Good bee-man to run 500 colonies bees for extracted honey during coming season. Give references, salary expected and experience in first letter.
Dr. D. W. Gibson, Beaver, Utah.

WANTED—One or two good queen-rearing men to begin work February 15, 1920.
Nueces County Apiaries, Calallen, Texas.

FOR SALE

FOR SALE—200 supers for 8-frame hives, about 50 for 1⅞, 150 for plain sections, with fence A1 for 4¼x4¼ sections. All factory made, some mitered at corners; all about as good as new. All new sections and started with 2 in. foundation, $1 each in lots of 10 or more.
J. W. Bittenbender, Knoxville, Ia.

OLD-TIME BEE BOOKS—50 to 250 years old. Every beekeeper should own at least *one*. Send for price list. John E. Miller,
114 East 27th St., New York City.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—20-acre farm, 200 colonies bees with equipment; one acre ginseng and goldenseal; excellent soil, buildings and bee location.
L. Francisco, Moon Rt., Dancy, Wis.

10-ACRE FRUIT RANCH—800 commercial apple trees, balance in cherry, plum, pear, peaches, gooseberry, currants and asparagus. Situated in the heart of well improved, irrigated district near Santa Fe railroad. Additional land adjoining for farming can be purchased or rented Good roads, churches and brick schools. New 7-room modern-built house, telephone, etc; 100 colonies of Italian bees in 10-frame hives; no disease. Full equipment, motor, extractor, etc. Established trade for full capacity production—sweet clover and alfalfa honey. Will sell ranch or bees separate, or will exchange for place of similar value and conditions in south, southwest or southeast.
Box 214, Springer, New Mexico.

FOR SALE OR EXCHANGE—Four-horsepower kerosene engine, ripping table saw, belting, grinding outfit; for motorcycle.
Cecil Whitt, Gimlet, Ky.

FOR SALE—Good second-hand double-deck comb-honey shipping cases for 4¼x5¼x1⅞ sections, 25 cents per case, f o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—About 50 colonies of bees, mostly Italians; also complete hives, supers, comb and extracted, and other used equipment. Bees and supplies are located near Lansing, Mich. Duplicate volumes A. B. J. and Gleanings also for sale or exchange. F. Eric Millen,
O. A. C., Guelph, Ontario, Canada.

FOR SALE OR EXCHANGE for bees, pound package or nucleus—One 22-caliber Meriden repeating rifle, 20-shot, $20; one Remington standard typewriter No. 6, $45, excellent shape. V. O. Blaylock, Roxboro, N. C.

WANTED

WANTED—By experienced woman, small apiary in northwest to run on shares; or work in large apiary.
Mildred Sturdevant, Boulder, Mont.

WANTED—Foundation machine, 10 or 12-in. rolls, and one 4 or 6-frame extractor.
Wilbrod Montpetit,
St. Louis de Gonzague Co., Beauh,
P. O. Quebec, Canada.

WANTED—On mountain farm near Bluemont, Va., beekeeper who wants good location, house, garden, fuel, fruit, spring, use of horse and cow, in return for looking after the place.
J. A. Truesdell,
612 Riggs Bldg., Washington, D. C.

WANTED—Around 75 colonies of bees, near South Dakota. Fred Day, Alcester, S. Dak.

WANTED—Bees—Commercial apiaries completely equipped for extracted honey production, at reasonable terms, in white honey region; preferably 300 colonies or more.
G. H. Cale,
423 Dorset Ave., Chevy Chase, D. C.

WANTED—Nearby, disease-free and in good condition, used 8 and 10-frame standard hives; also supers, excluders and empty combs wired. Could use few colonies healthy bees.
L. W. Smith, Madison, N. J.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

WANTED—200 or less colonies of bees (any style hive) for spring delivery. Address.
A. W. Smith, Birmingham, Mich.

WANTED—To buy bees free from disease, for April delivery, in southeastern Minnesota or western Wisconsin. State how many, kind of hives and price.
P. B. Ramer, Harmony. Minn.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

MISCELLANEOUS

WANTED—Beeswax, old combs and cappings to render on shares. Will pay highest market price and buy your share of the beeswax.
F. J. Rettig & Sons, Wabash, Ind.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.
The Deroy Taylor Co., Newark, N. Y.

FOR SALE—100 early cabbage or 100 early tomato plants, 50 cents; 100 sweet mango plants, $1, post paid.
J. F. Michael, R. 1, Winchester, Ind.

FOR SALE—40-acre farm in southern Minnesota; fine place for bees and chickens; good corn and potato land; good buildings; black clay soil, price $3,500; $1,000 cash, balance at 6 per cent.
Thos. Dildine, Kellogg, Minn.

ONE MINUTE CAMERA OUTFIT and observation bee hive; will exchange for kodak or typewriter.
Cecil Whitt, Gimlet, Ky.

FINE Kentucky maple trees, 6 months old, for shade purposes, 6 delivered anywhere, $1.
Cecil Whitt, Gimlet, Ky.

FOR SALE—California Wonder Corn for seed, doubles yield. Send for circular.
James McKee, Riverside, Calif.

FOR SALE—25-20 Winchester model,1896 32 double action revolver.
Edward Hogan, Stanley, N. Y.


ITALIAN QUEENS


The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

JOHN G. MILLER,
723 C Street, Corpus Christi, Texas.

AM BOOKING ORDERS

now for 1920 queens. Untested, $1.50 each; 25 or more, $1.35. Tested, $2.50 each; 25 or more, $2.25. Select tested, each, $3.

Limited amount of bees for early shipment. My descriptive circular tells about it. Write me your needs.

R. V. STEARNS
BRADY, TEXAS

The Correct "Red" Color

has been the chief topic of discussion among "Red" breeders. We have issued a beautiful color reproduction showing a trio of R. I. Reds in the *correct* red shade. This together with "Blue Ribbon Reds"—an authoritative book on mating, judging and exhibiting this popular breed—is free with every 2-year subscription to the R. I. Red Journal—all for 50c. Don't miss this! Send today.

THE RHODE ISLAND RED JOURNAL
3042 Bremer Ave. WAVERLY, IOWA

EAGLE "MIKADO" PENCIL No. 174



Regular Length, 7 inches

For Sale at your Dealer. **Made in five grades**

Conceded to be the Finest Pencil made for general use.

EAGLE PENCIL COMPANY, NEW YORK

TENNESSEE-BRED QUEENS

Forty-Eight Years' Experience in Queen-Rearing

Breed Three-Band Italians Only

PRICES OF QUEENS

	Nov. 1st to June 1st			June 1st to July 1st			Jnly 1st to Nov. 1st		
	1	6	12	1	6	12	1	6	12
Untested	$2.00	$ 9.00	$16.80	$1.50	$ 8.00	$14.50	$1.30	$ 7.50	$13.50
Select Untested	2.25	10.50	18.00	2.00	9.50	16.00	1.75	8.50	15.00
Tested	3.00	16.50	30.00	2.50	12.00	22.00	2.00	10.00	18.50
Select Tested	3.50	19.50	36.00	3.00	16.50	30.00	2.75	15.00	27-00

Select queens tested for breeding, $5.

The very best queens, tested for breeding, $10.

Queens for export will be carefully packed in long distance cases, but safe delivery is not guaranteed. I sell no bees by the pound, or nuclei, except with high-priced breeding queens.. Capacity of yard, 8,000.

JOHN M. DAVIS, Spring Hill, Tenn.

Importer and breeder of three-band Italian Queen Bees.

Depot and express offices, Ewell Station, on L. & N. R. R.

P. O. Spring Hill, Tenn., U. S. A.

MARSHFIELD GOODS

BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

Our Catalog is free for the asking

MARSHFIELD MFG. CO., Marshfield, Wis.

BEEKEEPERS' SUPPLIES—QUALITY AND SERVICE

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away, **bees are valuable.** We have everything required for practical beekeeping. Our goods for ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out, send for one, it is full of good stuff.

AUGUST LOTZ CO., Boyd, Wis.

PAINT WITHOUT OIL

Remarkable Discovery That Cuts Down the Cost of Paint Seventy-Five Per Cent.

A Free Trial Package is Mailed to Everyone Who Writes.

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone, or brick; spreads and looks like oil paint, and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

PORTER



BEE ESCAPE SAVES HONEY TIME MONEY

For sale by all dealers.

If no dealer, write factory

R. & E. C. PORTER, MFRS.

Lewistown, Illinois, U. S. A.

(Please mention Am. Bee Journal when writing)

BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

I. J. STRINGHAM, Glen Cove, N. Y.

NASSAU, CO.

BEE SUPPLIES

FALCON LINE

Best goods made. Get our big discount sheet before buying.

C. C. CLEMONS BEE SUPPLY COMPANY

128 Grand Ave.

Kansas City **Mo.**

BETTER SEEDS

Pheasant Eye Beans. New bush stringless—38 day Beans, **Hot Squash Peppers.** Carrots sweet enough for Pies, **New Narrow Grain Sugar Corn.** Also Red Skin Dent corn, shock it in **70 days.** Write for complete **Seed Catalog No. 22**

J. A. & B. LINCOLN, Seed Growers

39 South La Salle Street Chicago, Illinois

Crop and Market Report

Compiled by M. G. Dadant

There is very little to report since last month. The demand for honey on the part of the consumer seems to be slackening, so that most of the wholesalers should have sufficient on hand to supply their customers for the balance of the spring.

Smaller beekeepers are probably nearly all sold out of honey and are bending their efforts towards the coming season. The larger associations also have sold a large proportion of their output satisfactorily

There are still a few large producers who have not disposed of their crop and who are now seeking a market. It is hardly likely that these will get a higher price now than was ruling two months ago.

More and more the honey producer is tending towards co-operative marketing, as he should. We cite as instances of lack of proper knowledge of conditions one Illinois producer who disposed of his whole crop of several thousand pounds at 13 cents. We also have reports that some Cuban producers were forced to sell as low as $1.20 per gallon, or 10 cents per pound, for a good grade article.

Wintering and Prospects

Some reports of large losses are coming in, though it is yet too early to give an idea of what the loss will be.

White clover prospects in some sections seem extra fine, while in many others only mediocre.

We expect to have a fuller report for the April issue.

TWO NEW BEE BOOKS

We have just completed publication of two new bee books, special in their field, and for which there has been insistent demand

AMERICAN HONEY PLANTS

Including those important to the beekeeper as sources of pollen

By FRANK C. PELLETT

This book is the result of many years of personal investigation and travel from New England to California and from Canada to Florida and Texas to secure first-hand information on the sources of nectar and pollen. It is splendidly illustrated with 156 photographs, and describes the honey plants of all parts of America. A list of the honey plants of each State is given separately and the plants described in alphabetical order.

A knowledge of the flora is important to every beekeeper, as it is often possible to double the crop by moving an apiary but a few miles. This book is written by an expert beekeeper and a competent observer, only after having visited apiaries in most of the important honey-producing districts.
300 large 8vo pages. Enameled paper. Price $2.50.

OUTAPIARIES

By M. G. DADANT

The development of beekeeping has been in direct relation to the extension of outyards in most localities. The Dadant family has kept bees extensively in the same locality for three generations and the author of this book has spent his life in commercial honey production.

The book deals with the business of beekeeping on a large scale, and describes the methods and practice of the most successful beemen. Special chapters on honey houses and equipment, autos and trucks and similar apparatus required by the extensive honey producer.

125 pages, 50 illustrations. Price $1.

Add 75 cents to the price of either of the above books and get the book and the American Bee Journal for a full year.

AMERICAN BEE JOURNAL, Hamilton, Illinois

"Falcon"

I am a "Falcon" bee

"Falcon"



I live in a "Falcon" hive.

I am gentle and contented. I love to work in my home because everything is just as I like it.

The hive body is well constructed; that is why our honey crop is always plentiful.

Our queen is a "Falcon" queen—she is a three-banded Italian of pure healthy stock.

We all agree that our colony is successful, but so ar e all the "Falcon" hives in our apiary.

The other bees tell me when we meet in the fields.

Send at once for a "Falcon" queen, a hive or any bee supplies you need. Don't delay. Spring will soon be here.

"Falcon" bees and supplies always give the best results.

I KNOW BECAUSE—I AM A "FALCON" BEE

W. T. FALCONER MANUFACTURING CO., Falconer, N. Y.

Where the best Bee Hives come from

QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

Prices for May and June:

	One.	Six.	Twelve.
Untested	$2.00	$ 9.00	$16.80
Select untested	2.25	10.50	18.80
Select tested	3.50	19.50	35.00

Orders booked now for May delivery, one-fourth down, balance to be paid before queens are shipped. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free.

HARDIN S. FOSTER, Columbia, Tenn.

EARLY QUEENS BY RETURN MAIL

IF YOU WANT THE CHEAPEST BUY THE BEST

Weather permitting, I will begin mailing my bright Italian Queens April 1, at the following prices:

Untested, single, $1.50, six for $7.50, twelve for $14. Select tested for breeding, $4 each.

Can fill no more orders for nuclei till after June 15, or queens till June 10.

If queens are wanted add kind and price. I guarantee every queen I send out, and your money refunded if not satisfied. I also guarantee safe delivery, free from disease; and quick service. All orders will receive prompt attention and will be filled by return mail, or as soon as possible after receiving your order. Now is the time to send in your orders if you want early queens.

A. B. MARCHANT, Jesup, Ga.



PAT. JULY 30, 1918

C. O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

Write for Price List and Booklet descriptive of

HIGH-GRADE Italian Queens

JAY SMITH
Route 3
Vincennes, Ind.



BEST GOLDEN ITALIANS

BEN G. DAVIS, SPRING HILL, TENN.

BEE SONGS, 2c EACH

I will mail copy of **"Songs of Beedom,"** having 10 bee songs, for only 20c; 7 Teddy Bear souvenir postal cards for 10c; J. J. Wilder's book, "Southern Bee Culture," 30c; Danzenbaker 3½ in. Bee Smoker, 90c. All postpaid at prices given. Address GEORGE W. YORK,, 1128 W. Glass Ave., Spokane, Wash.

QUEENS—DOOLITTLE'S—QUEENS

Equal to any, superior to many. Doolittle's strain of three-band pure Italians have long been recognized as America's standard. Get them here and stock your apiaries with disease resisters, from a location free of disease. They are gentle and do justice in the supers.

Satisfaction and safe arrival guaranteed, or your money back.

Prices, cash with order, are as follows:

	Before July 1.			July 1 to Nov. 1.		
	1	6	12	1	6	12
Untested	2.00	$8.50	$15.00	$1.25	$6.50	$11.50
Select Untested	2.25	9.50	18.00	1.50	7.50	13.00
Tested	3.00	16.50	30.00	2.00	10.00	18.50
Select Tested	3.50	19.50	35.00	2.75	15.00	27.00

Larger quantities less in proportion to number and time wanted. No nuclei except to accompany tested or select tested queens. Write for prices.

JENSEN'S APIARIES, PENN, Lowndes Co., Miss.

BEEKEEPERS ATTENTION

You can make your business more profitable and easier to handle through the proper use of modern equipment. This is supplied in LEWIS BEEWARE by

WESTERN HONEY PRODUCERS
SIOUX CITY, IOWA

SEND LIST OF YOUR NEEDS OR REQUEST FOR NEW CATALOG TO DEPT. B

THAGARD'S ITALIAN QUEENS

I am booking orders for April to July deliveries. My three-band queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting and honey producers.

Untested queens, $1.50; 6, $7.50; 12, $13.50. Select untested queens, $1.75; 6, $9; 12, $16.
I guarantee pure mating, safe arrival and perfect satisfaction. Circular free.

V. R. THAGARD, Greenville, Ala.

QUEENS POUND PACKAGE BEES QUEENS

WANTED THE BEST BREEDING QUEEN THAT IT IS POSSIBLE TO SECURE

If you have one that has proven *exceptionally good*, give price and full description in first letter. If you have a queen that you would like to have 50 or more queens reared from, send her along and get them at my regular prices. I will book orders for 3,000 pounds bees for May delivery; one-fourth cash with order, balance May 1. First come, first served.

PRICES OF BEES, F. O. B. HERE, BY EXPRESS

5 1-lb. packages, each	$3.00
5 2-lb. packages, each	4.50
5 3-lb. packages, each	6.00

To above prices add price of queens wanted; 1 per cent discount on 25 or more packages; 1 per cent off for return of package.

3-BANDED ITALIAN QUEENS—April and May Delivery

Virgins	Untested	Select Untest	Tested	Select Tested.
1—$1.00	$2.00	$2.25	$3.00	$4.00
6— 4.50	9.00	10.50	16.00	24.00
12— 8.00	17.00	19.00	30.00	40.00

Breeding queens, $5 to $10.

Ask for prices on colonies and nuclei.

W. O. VICTOR, Queen Specialist. Uvalde, Texas

MONEYCOMB

THE ALUMINUM HONEYCOMB

THE WAY TO GREATER PRODUCTION

We are shipping **"MONEYCOMBS"** all over the civilized world, their success is tremendous.

The question is not, can you afford them, but how can you do without them? Make your bees be efficient.

Beeswax is the most costly product of the honeybee and since wax for comb building can only be produced at the expense of many times its weight in honey it is well that the ingenuity of man has invented one of the greatest aids to profitable beekeeping—the Aluminum Honeycomb.

With **MONEYCOMB** you can:

1. **Produce more honey**
2. **Extract cleaner, no breakage**
3. **Control all disease**
4. **Raise more brood**
5. **Save loss from melting and destruction by animals and insects**

"The Aluminum Comb 'MONEYCOMB' is here to stay; its assistance to beekeepers is invaluable.
"H. B. PARKS, State Apiary Inspector of Texas."

"My honeyflow was so light the bees would not draw out the foundation. I was compelled to use aluminum combs, 'MONEYCOMBS,' for brood rearing, and they proved an unqualified success.
"GEORGE D. SHAFER, Palo Alto, Calif."

"My experience with 'MONEYCOMBS,' the aluminum honeycomb, caused me to rank it with the centrifugal extractor.
"A. Z. ABUSHADY, editor of 'Bee World' and Secretary of Apis Club, Benson, Oxon, England."

"I have conducted exhaustive experiments with 'MONEYCOMB,' the aluminum honeycomb, and can heartily recommend it as the most satisfactory honeycomb I ever used in my long experience of bee raising. PROF. WILL C. STEINBRUNN,
"Principal of Los Gatos School of Apiculture, San Jose Street, Alameda, Calif."

Our Factory is now fully equipped and your order will be shipped immediately on receipt

Made in Langstroth or Hoffman sizes at 60c per frame, f. o. b., Pasadena. Write for prices on both shallow and Jumbo sizes. Discounts given on large orders.

Booklet "B 1" describing **"MONEYCOMBS"** mailed on request.

ALUMINUM HONEYCOMB COMPANY

FACTORY AND OFFICE

Chester and Colorado Streets, Pasadena, California

FOREHAND'S THREE BANDS

THE THRIFTY KIND

We have been breeding these queens for the market for over a quarter of a century. They are bred from the imported Italians, but by select breeding we have brightened the color and retained the good qualities of their mothers.

After years of select breeding we have built up a strain of bees that are **surpassed by none, but superior to many.** Our queens are thrifty, hardy, gentle and beautiful.

We guarantee pure mating, safe arrival and satisfaction.

PRICES: After April to July 1

Untested—1, $1.50; 6, $7.50; 12, $13.50; 100, $1 each.
Select untested—1, $1.75; 6, $9; 12, $16.50; 100, $1.25 each.
Tested—1, $2.50; 6, $13; 12, $24.50; 100, $2 each.
Select tested—1, $4; 6, $22; 12, $41.50; 100, $3.35 each.

Pound Bees from April 15 to June 30

One-pound package—1, $3; 25 or more, $2.75.
Two-pound package—1, $5; 25 or more, $4.60.
Three-pound package—1, $7; 25 or more, $6.45.
Add the price of the queen wanted.

W. J. FOREHAND & SONS, The Bee Men
Fort Deposit, Alabama



A BIG STOCK OF BEE SUPPLIES

ALL BOXED, ready to ship at once—thousands of Hoffman Frames; also Jumbo and Shallow Frames of all kinds—100 and 200 in a box. Big stock of Sections and fine polished Dovetailed Hives and Supers.

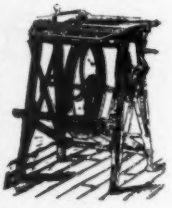
I can give you bargains. Send for a new price list. *I can save you money.*

Will take your Beeswax in Trade at Highest Market Price

CHAS. MONDENG
159 Cedar Lake Road MINNEAPOLIS, MINN.

BARNES' Foot Power Machinery

Read what J. E. Rarent, of Chariton, N. Y., says: We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.



W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS

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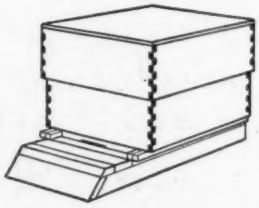
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